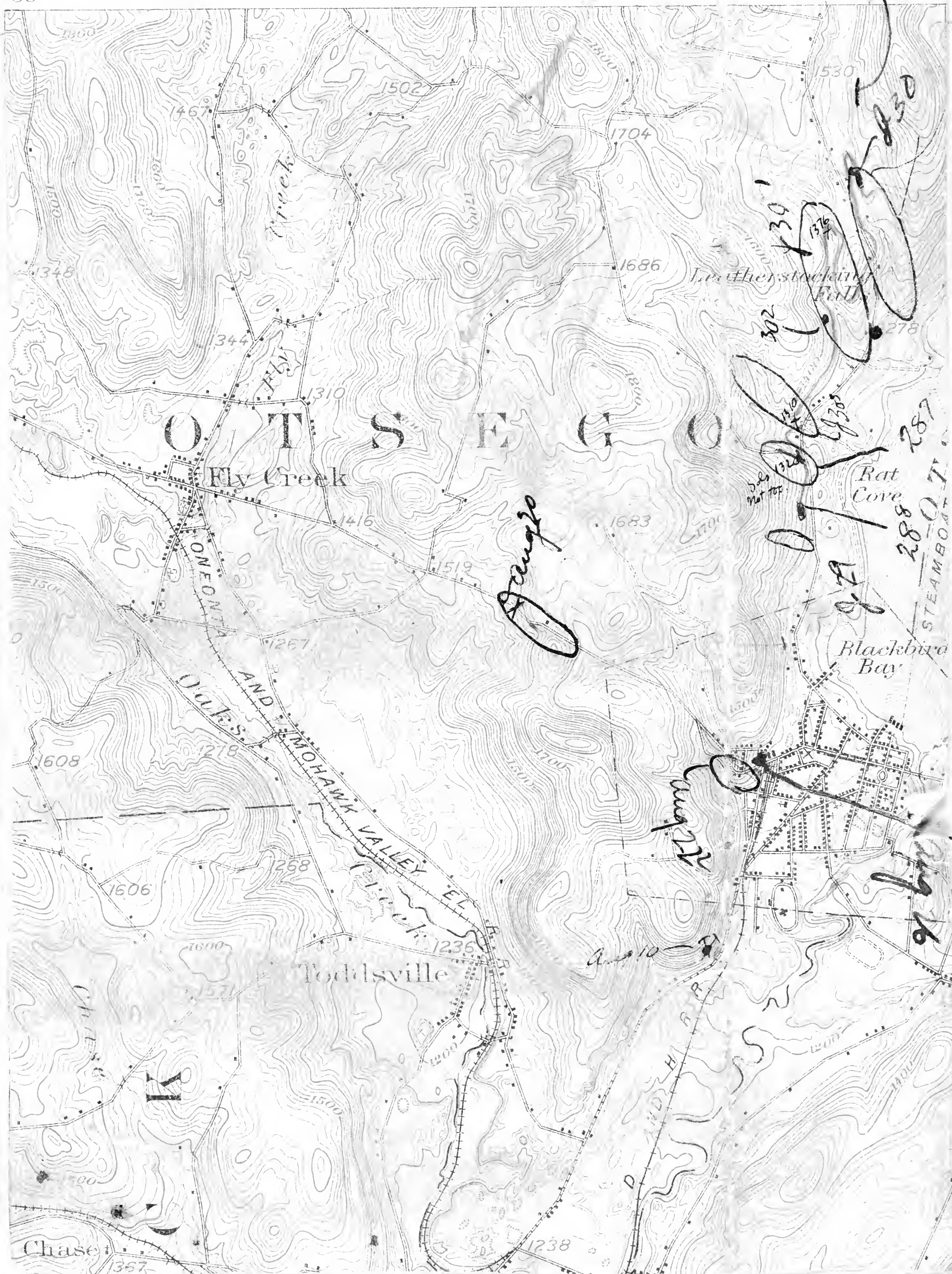
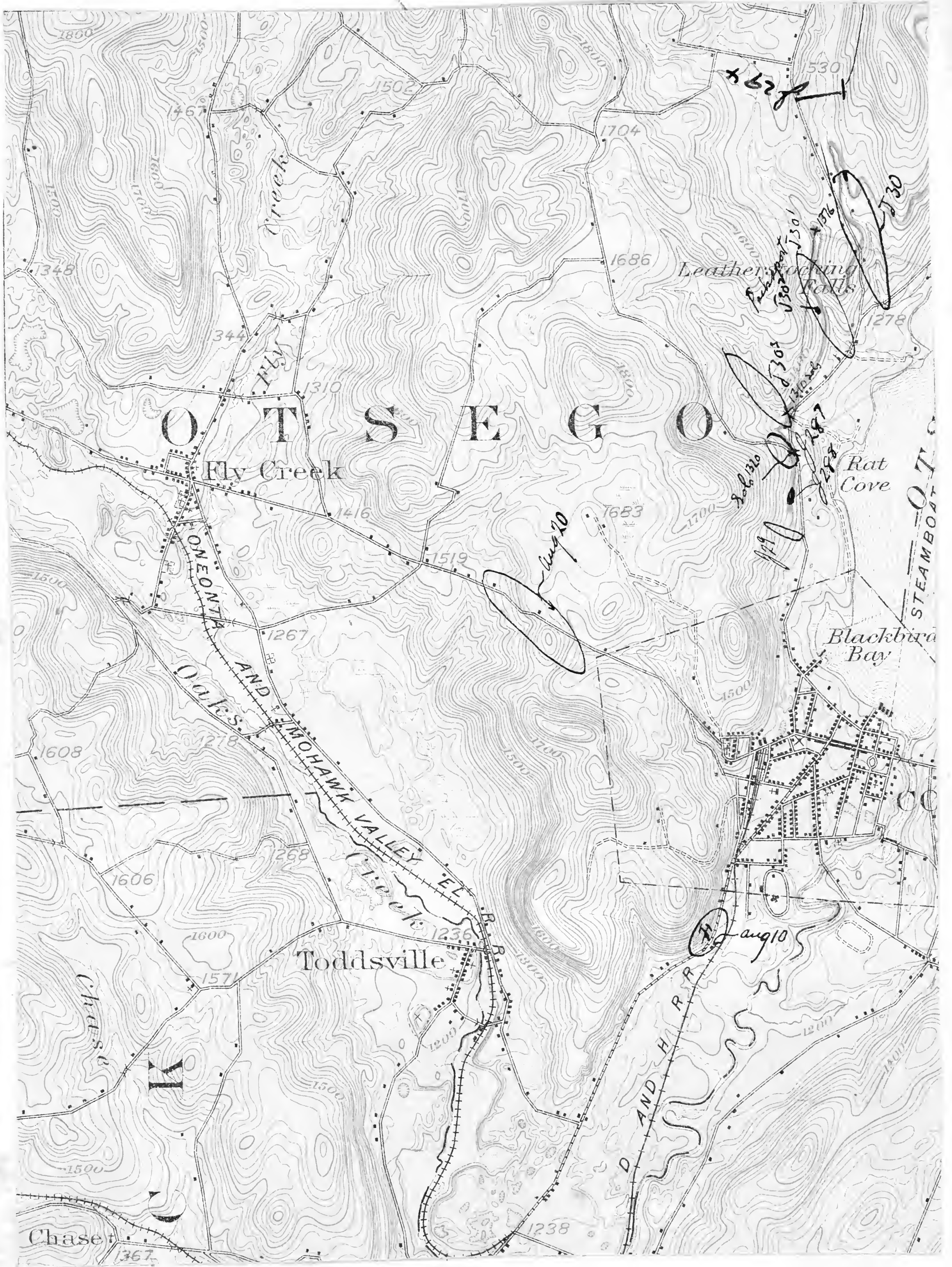
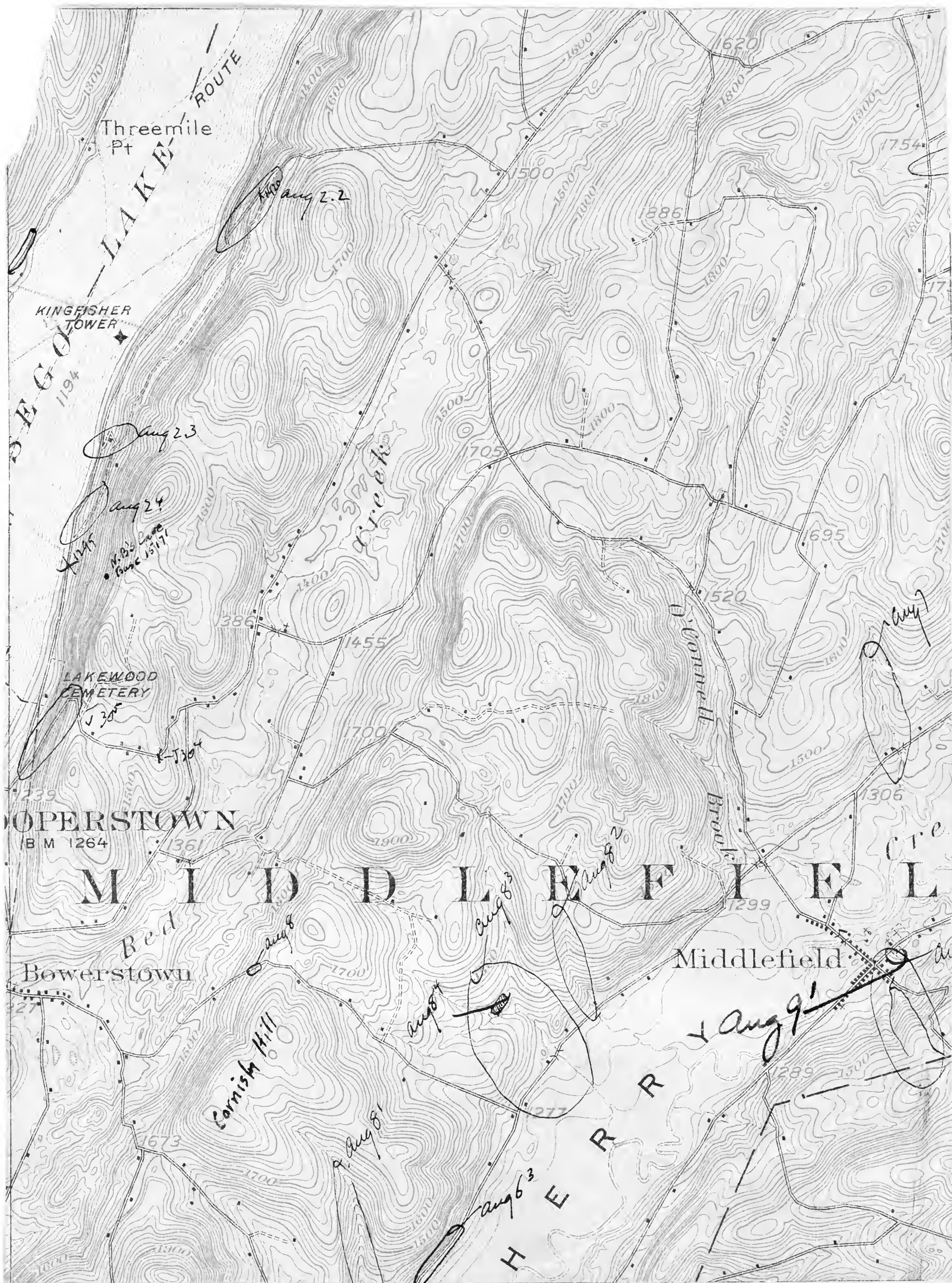


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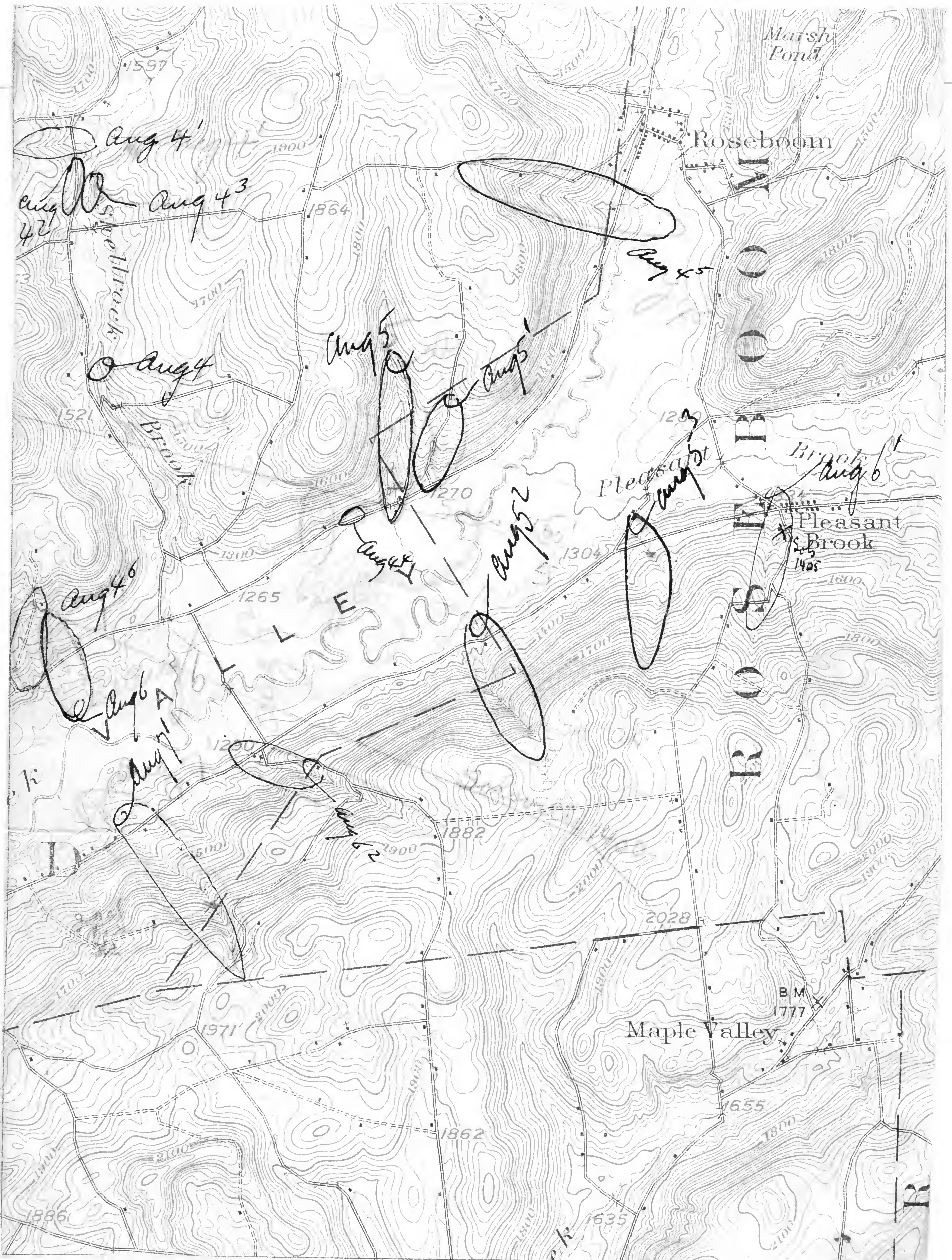


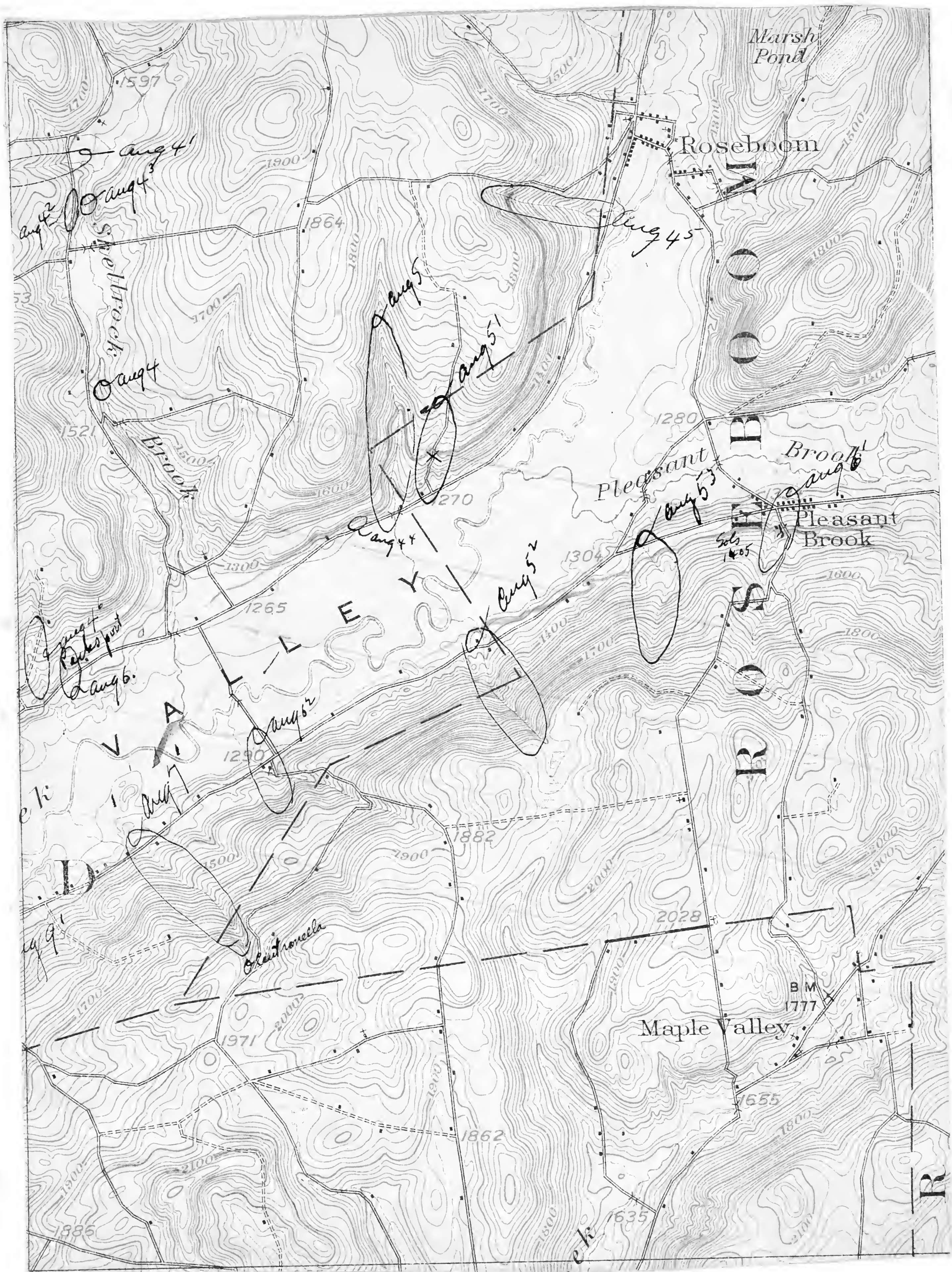


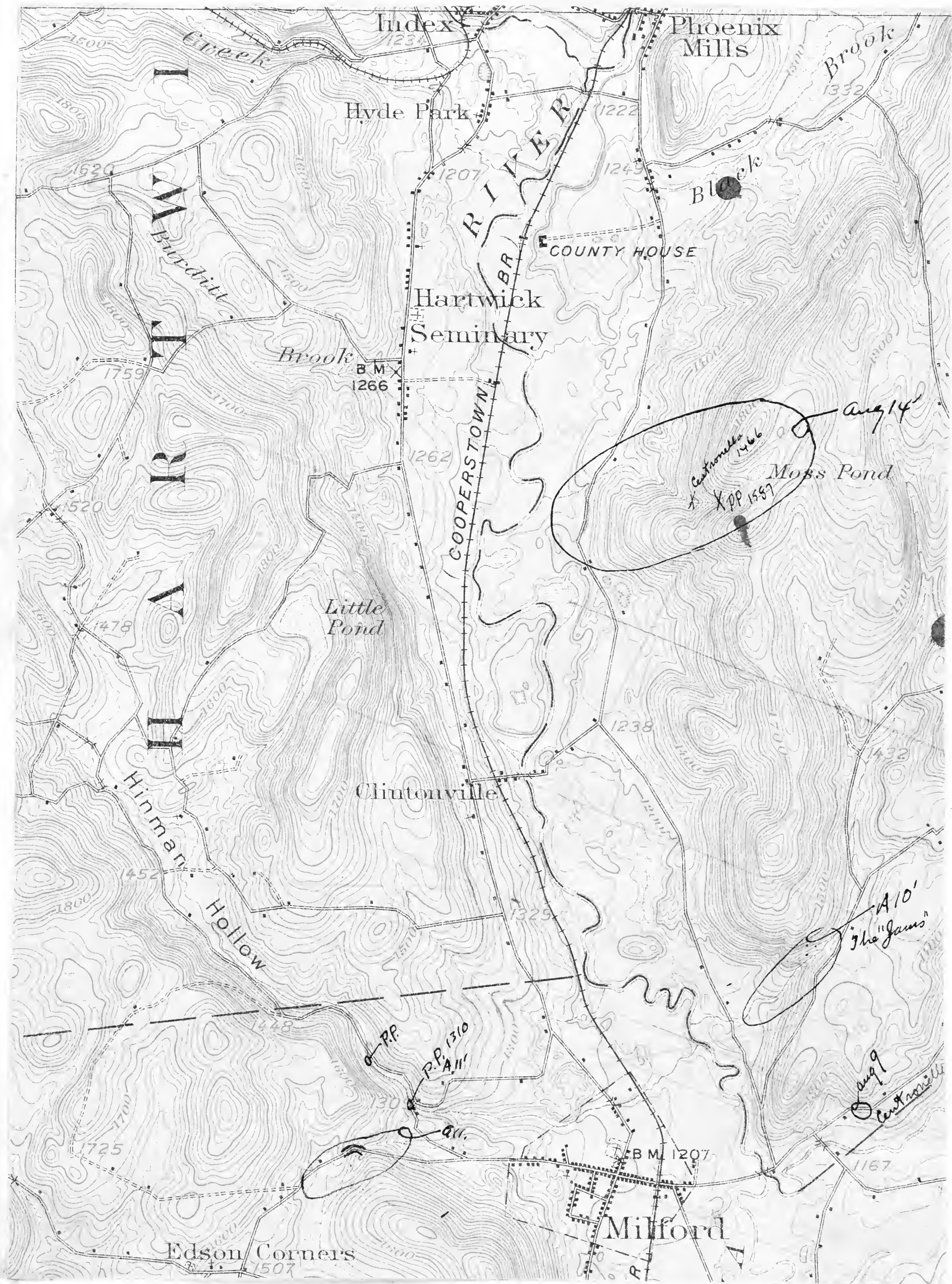


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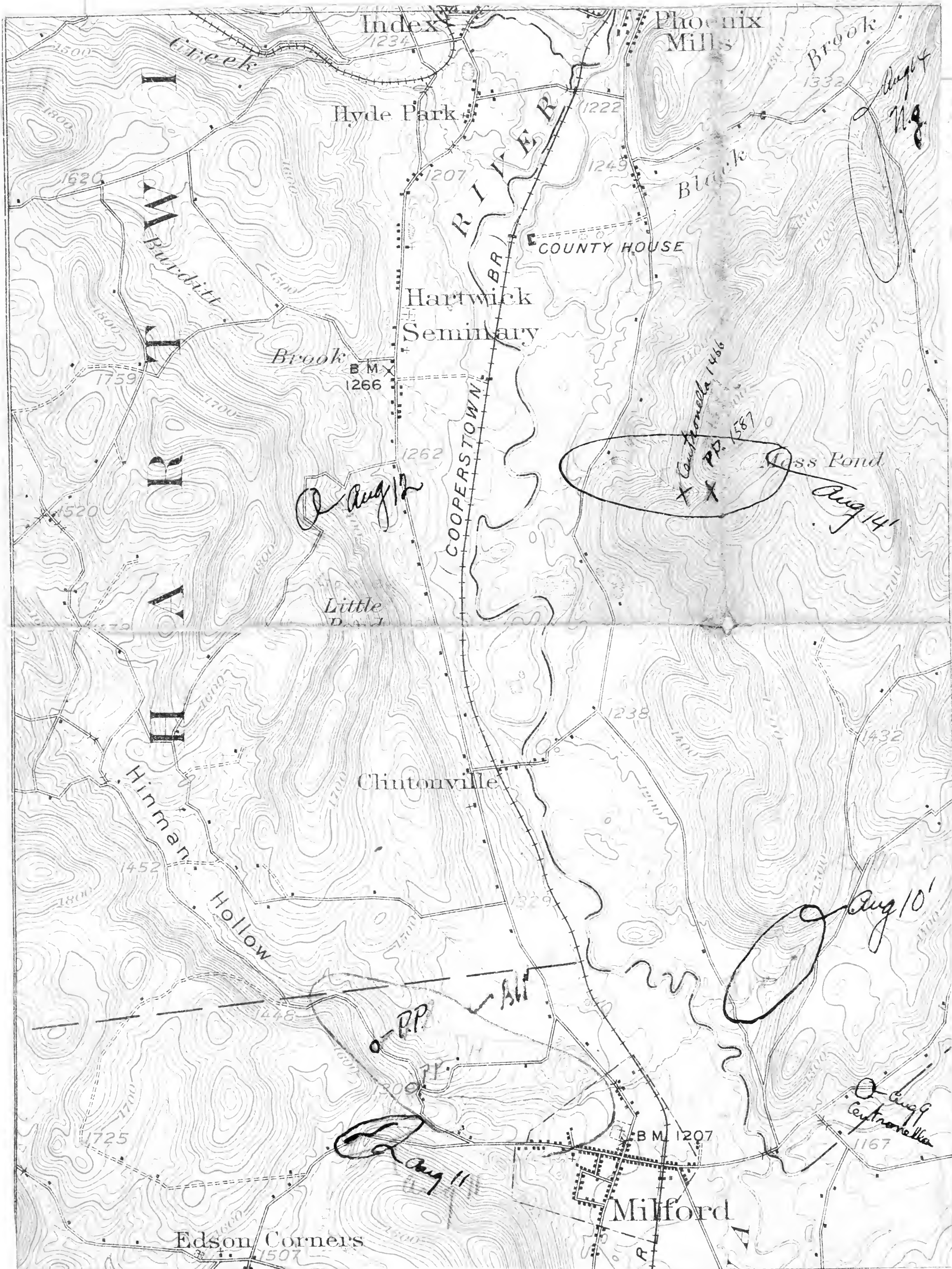




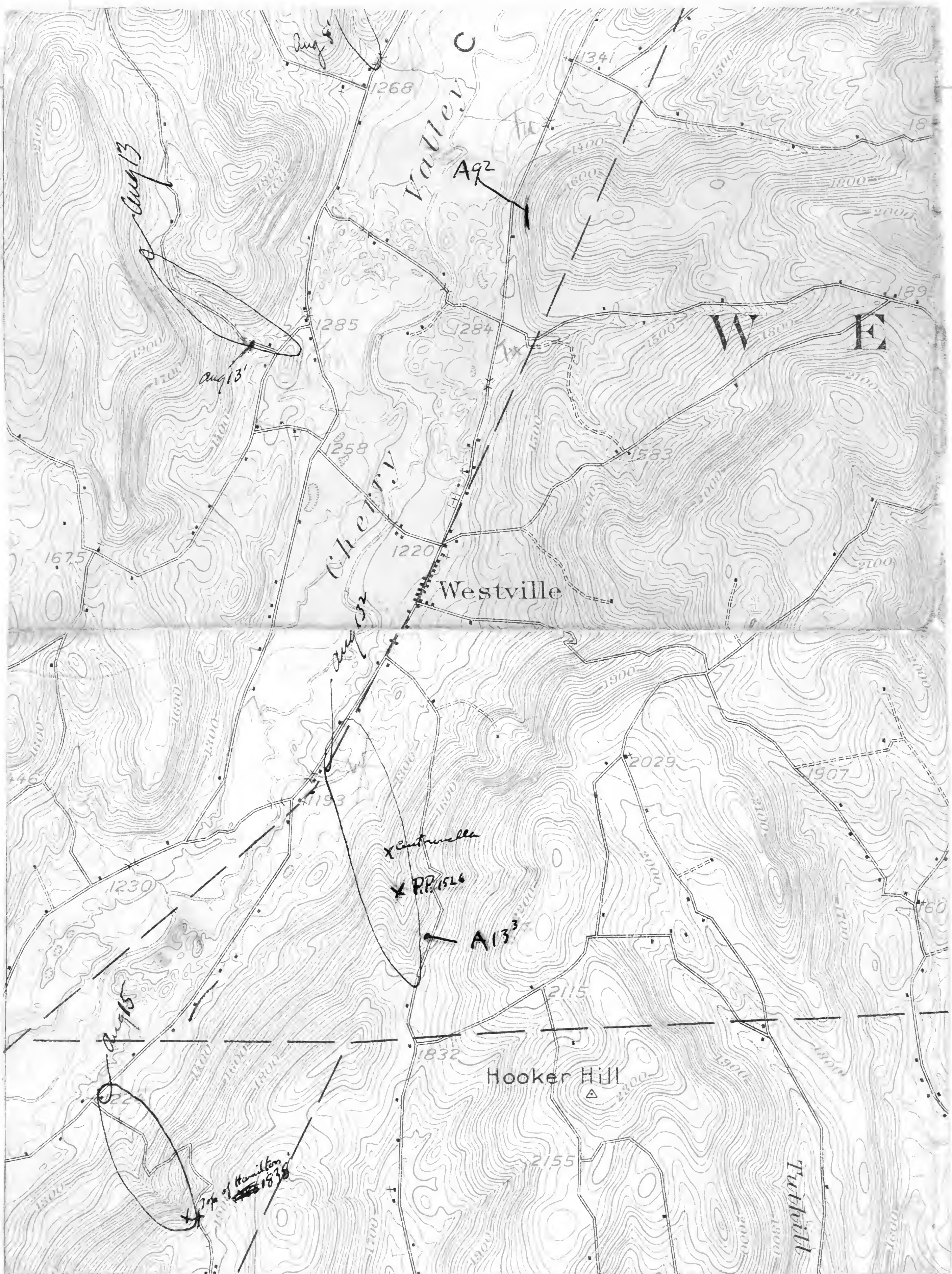


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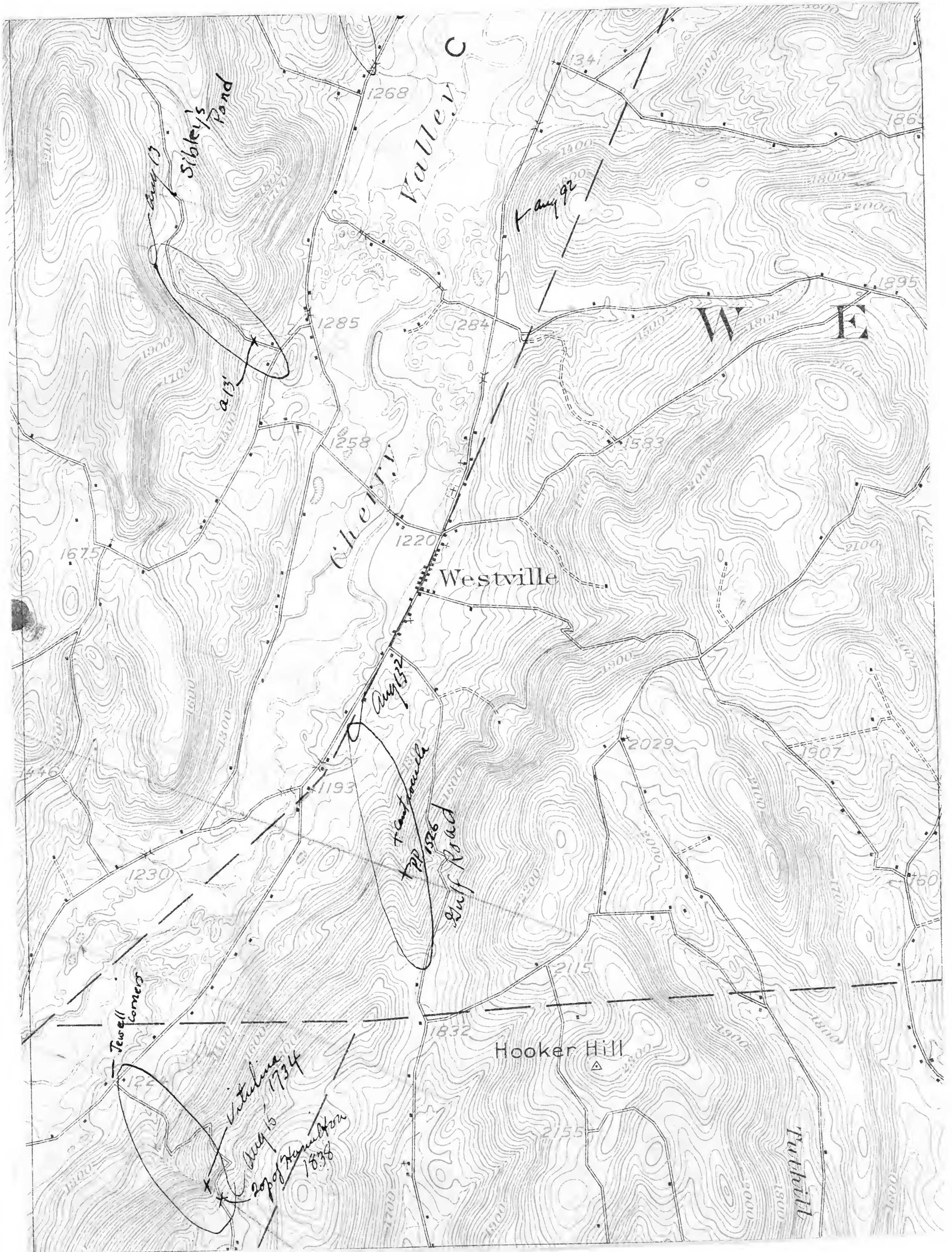
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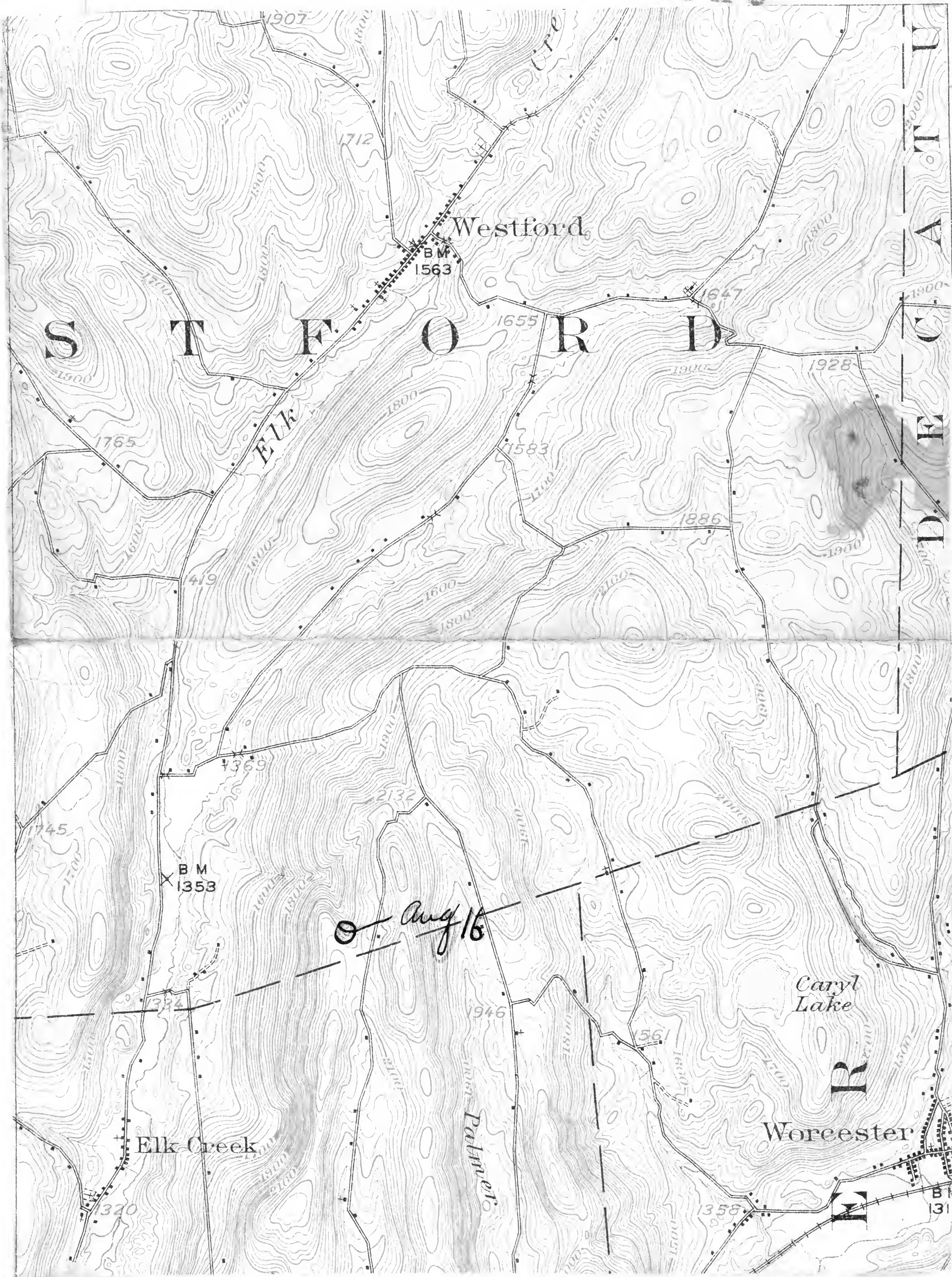
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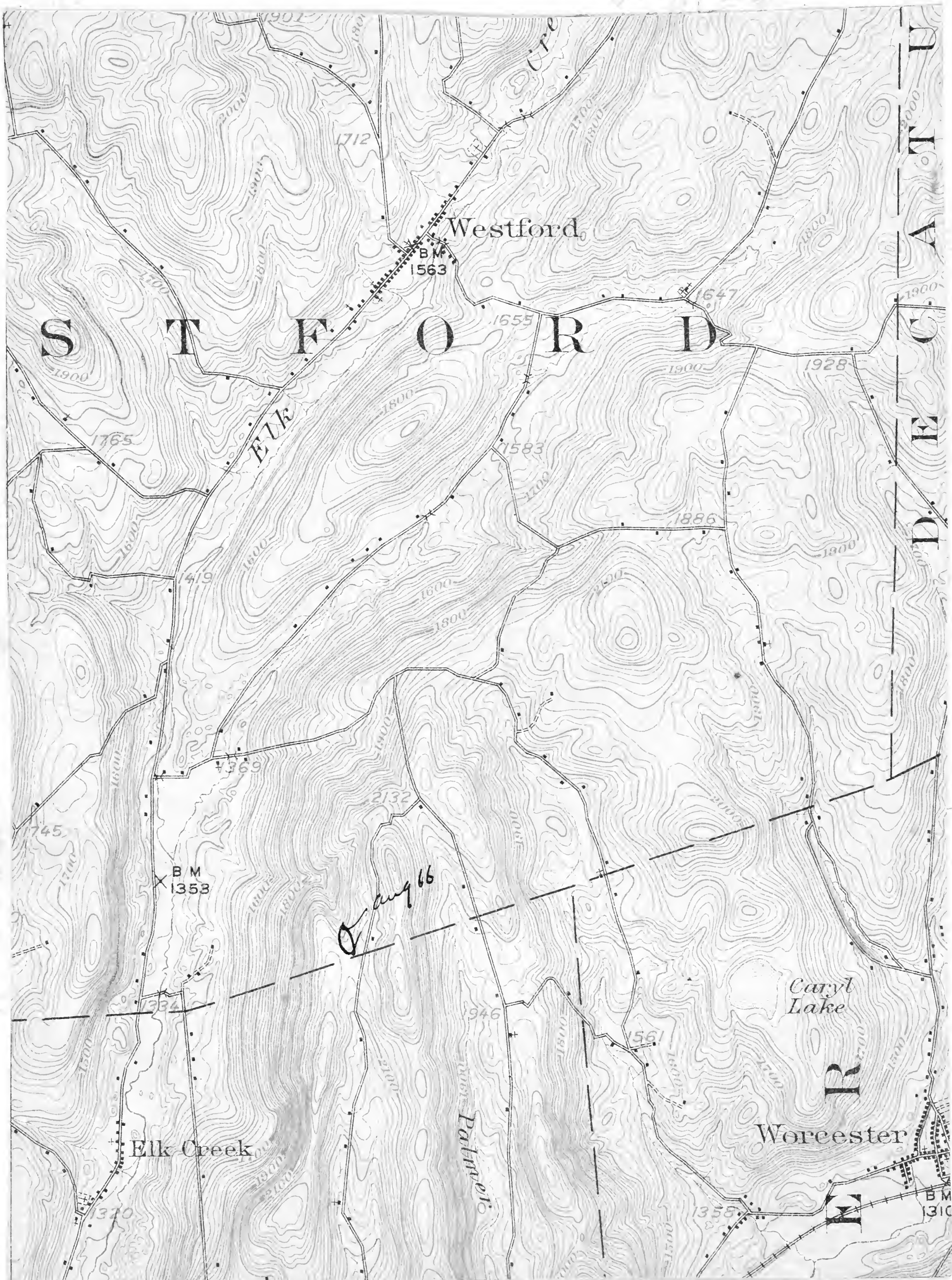
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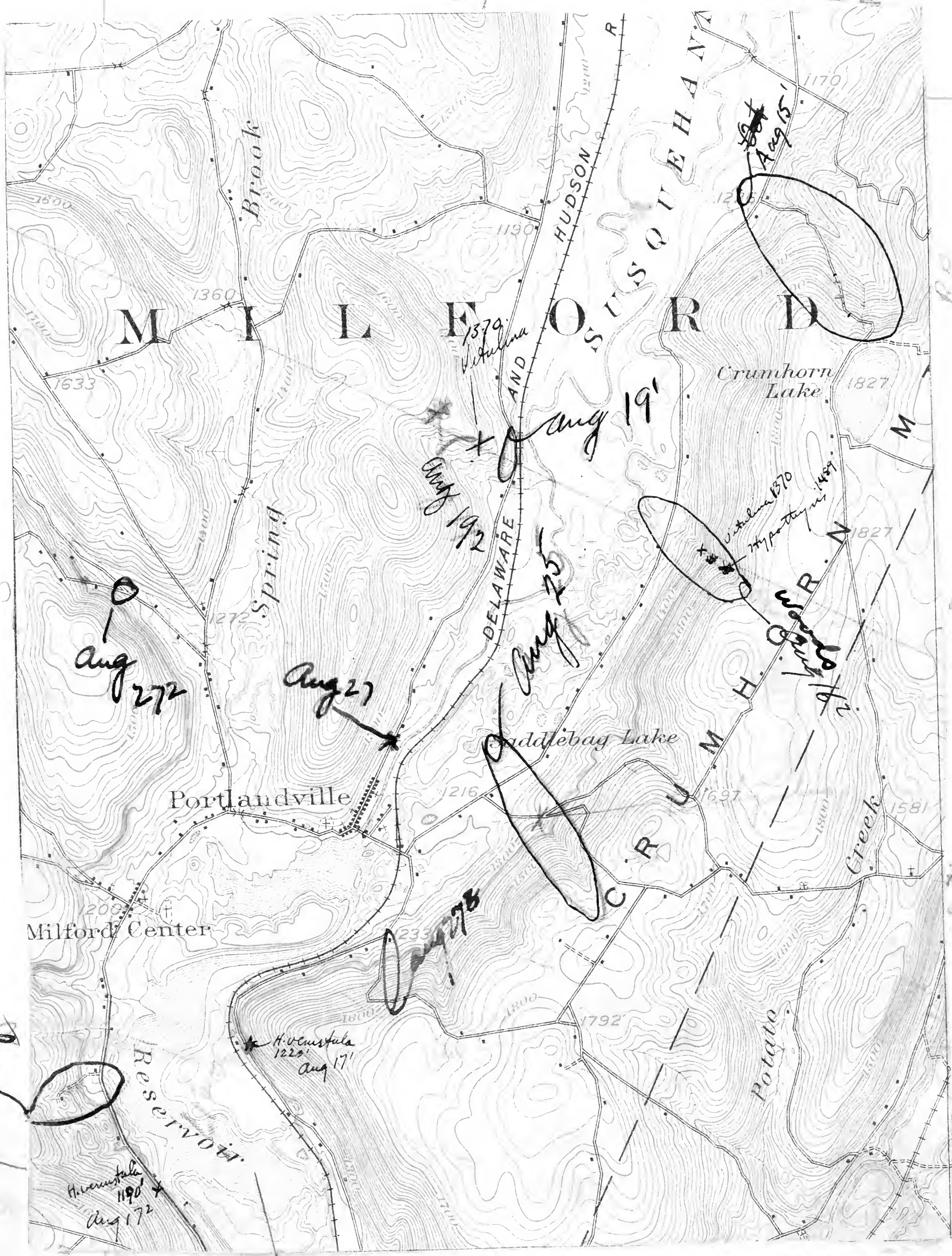


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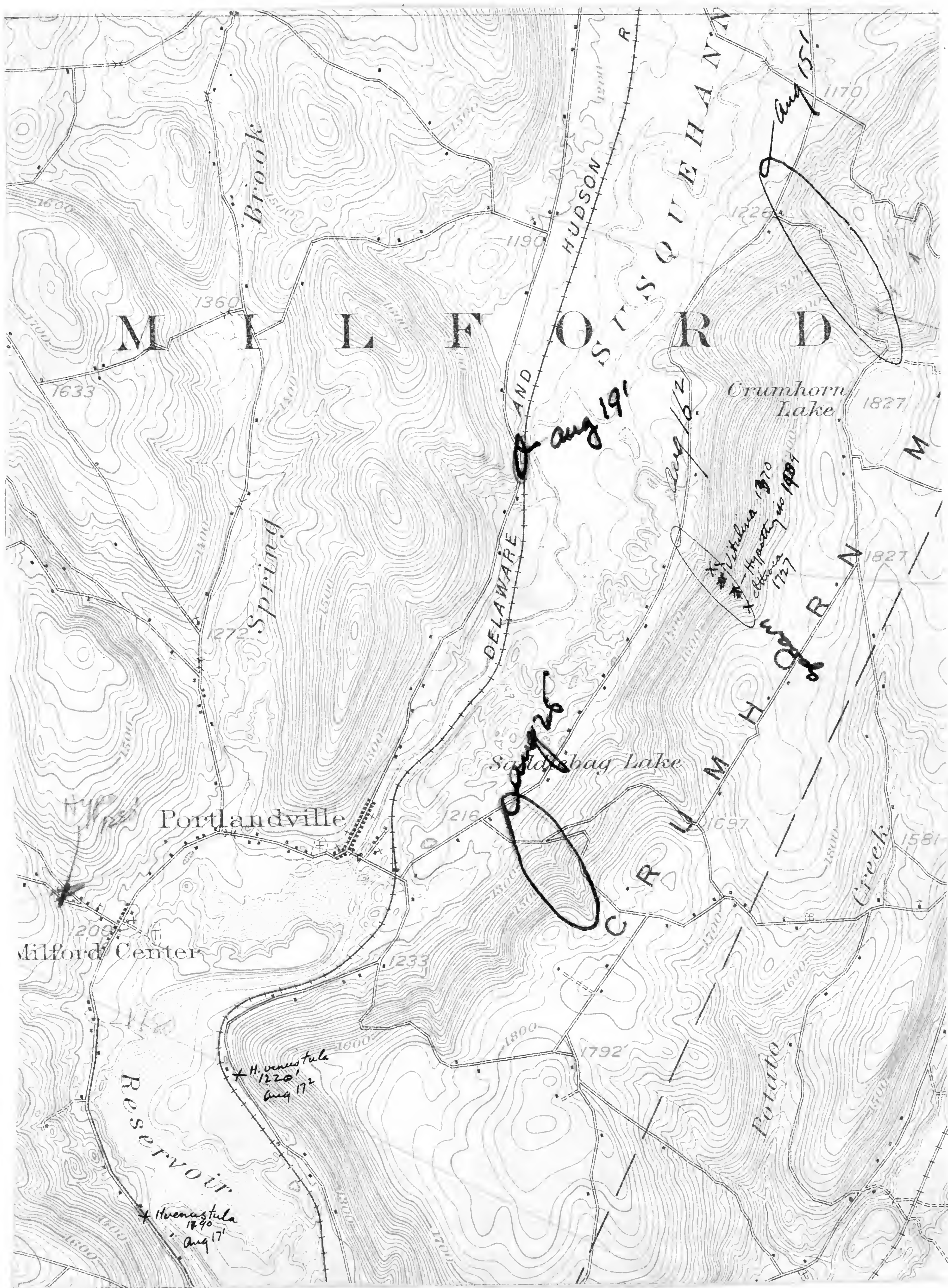


Aug 27

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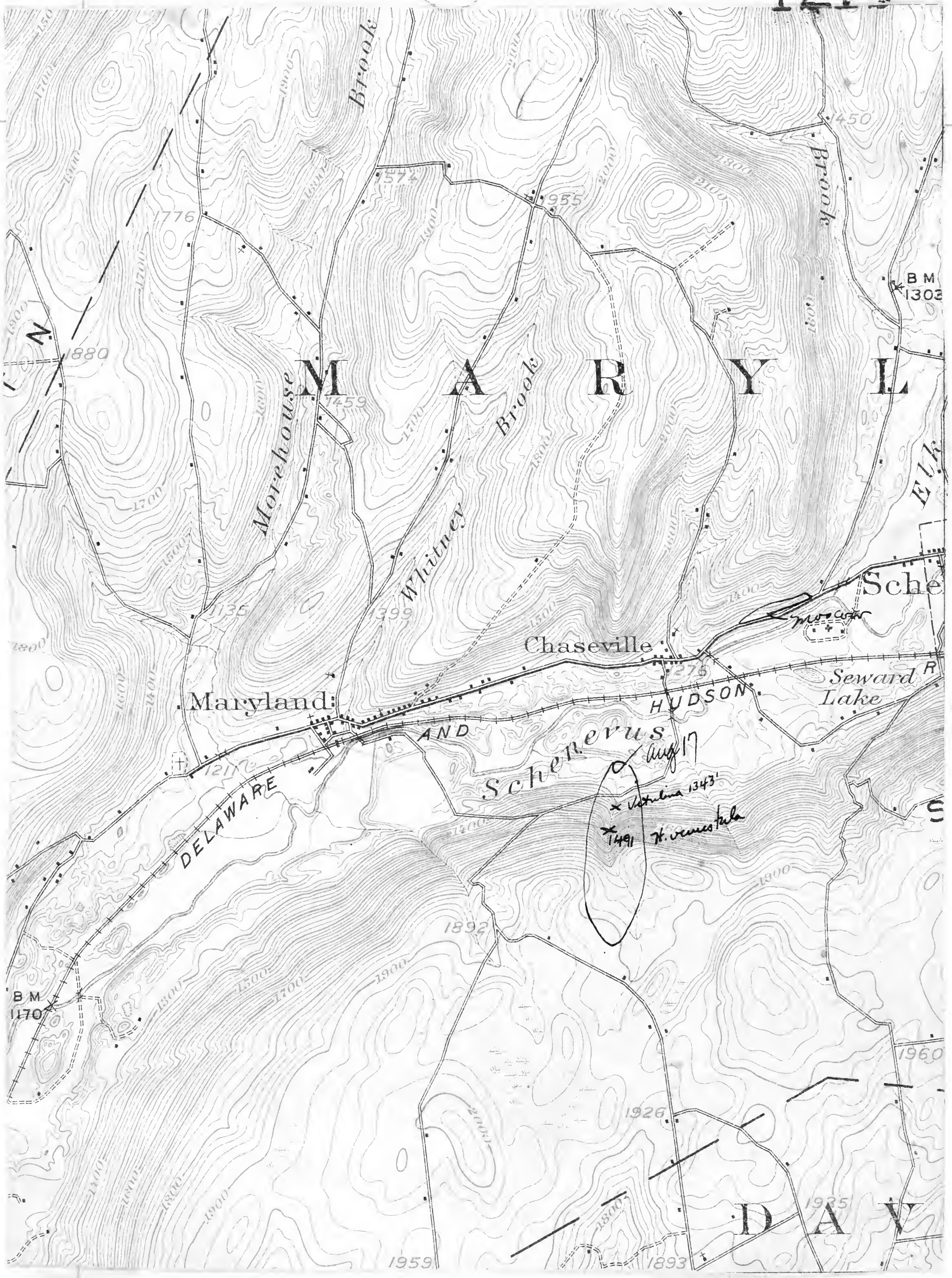
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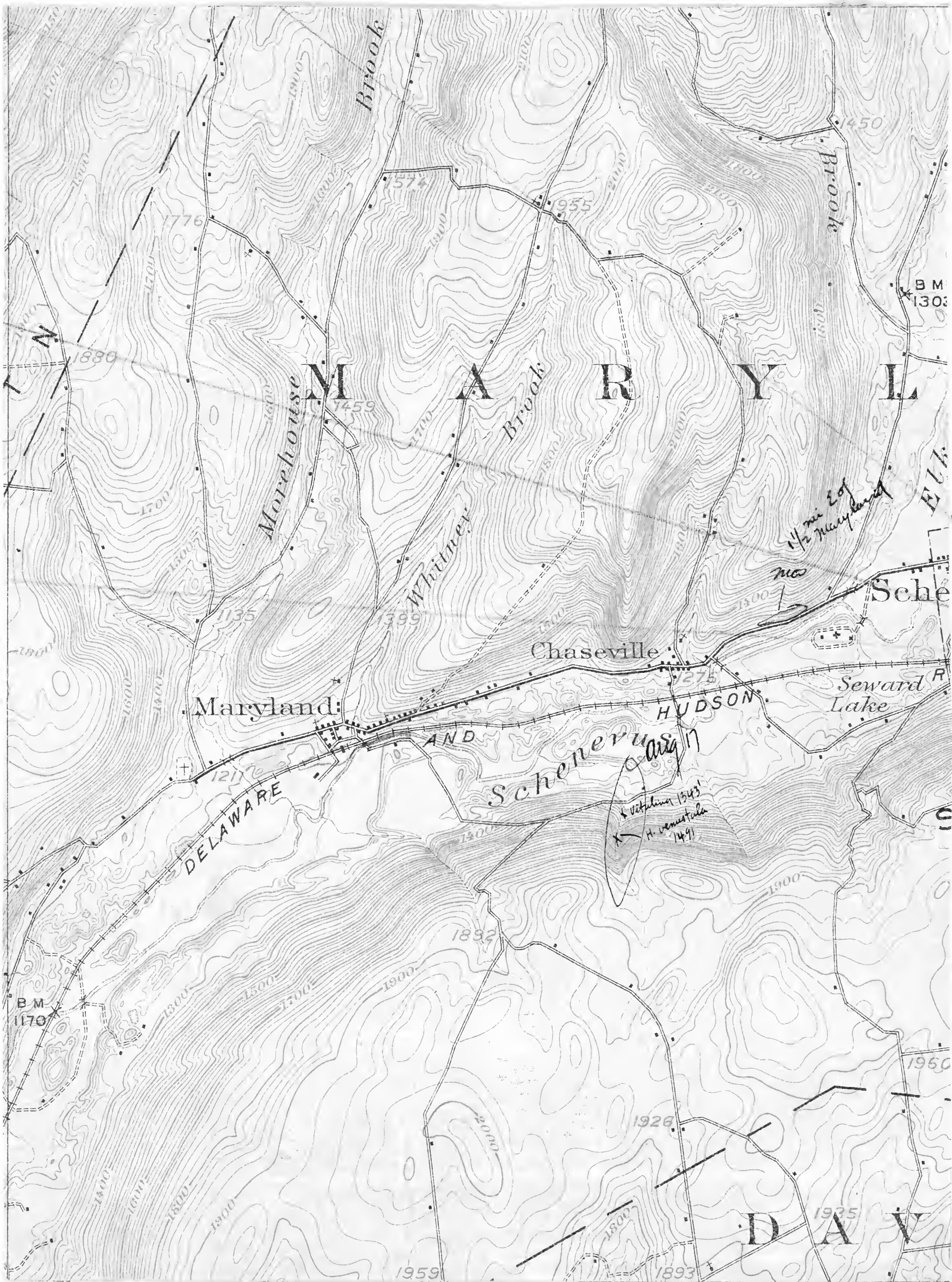
1212



59
295
304
1271

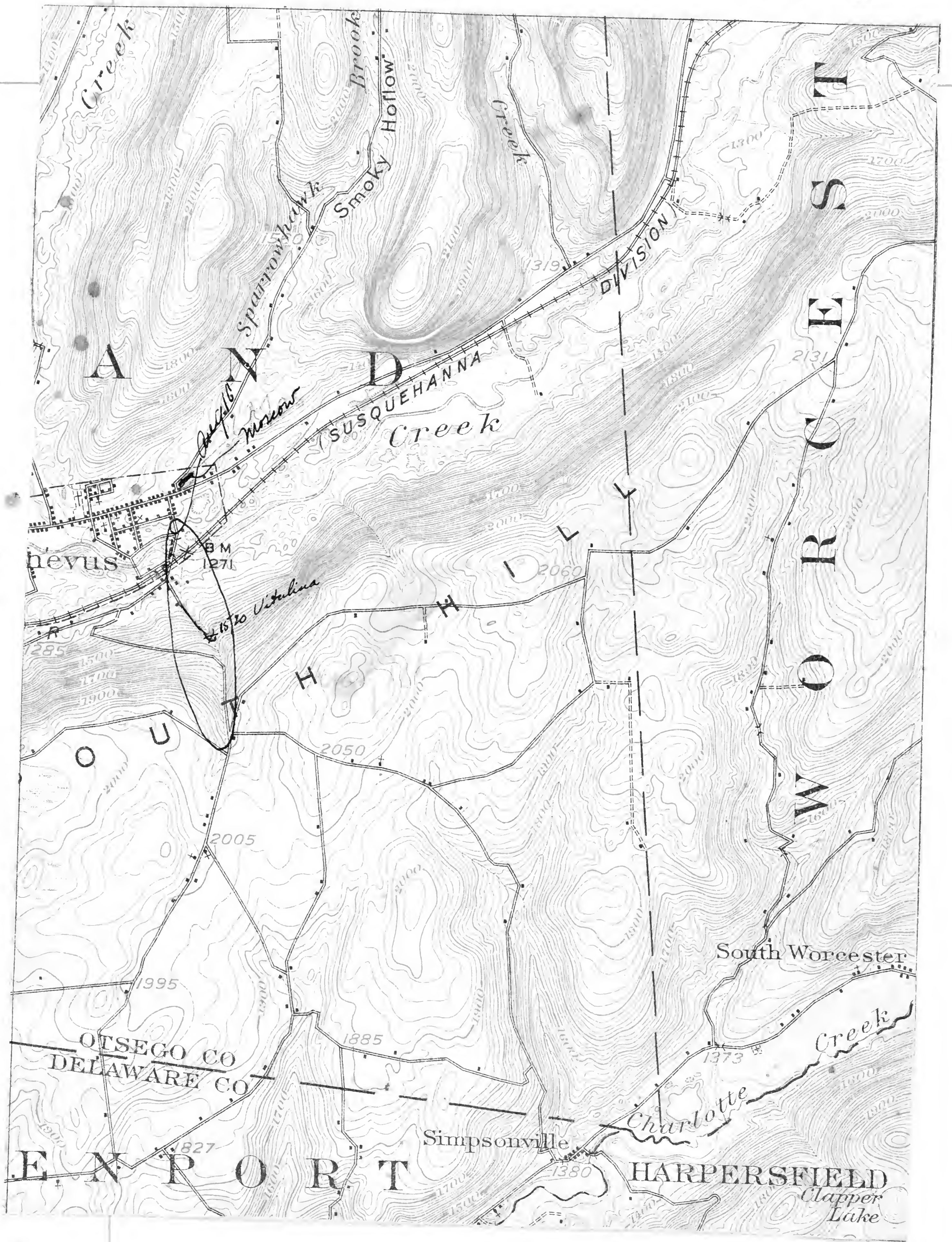
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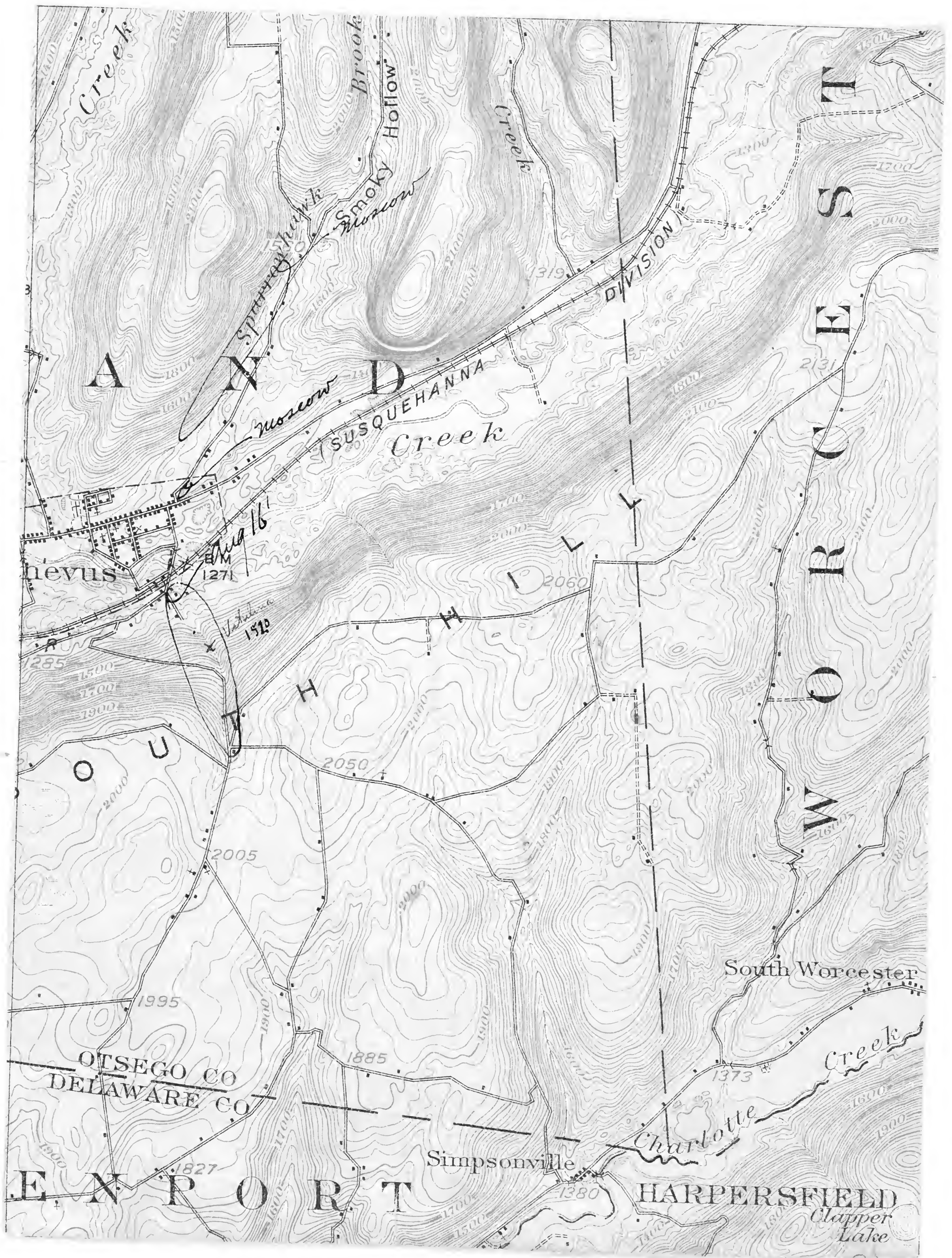
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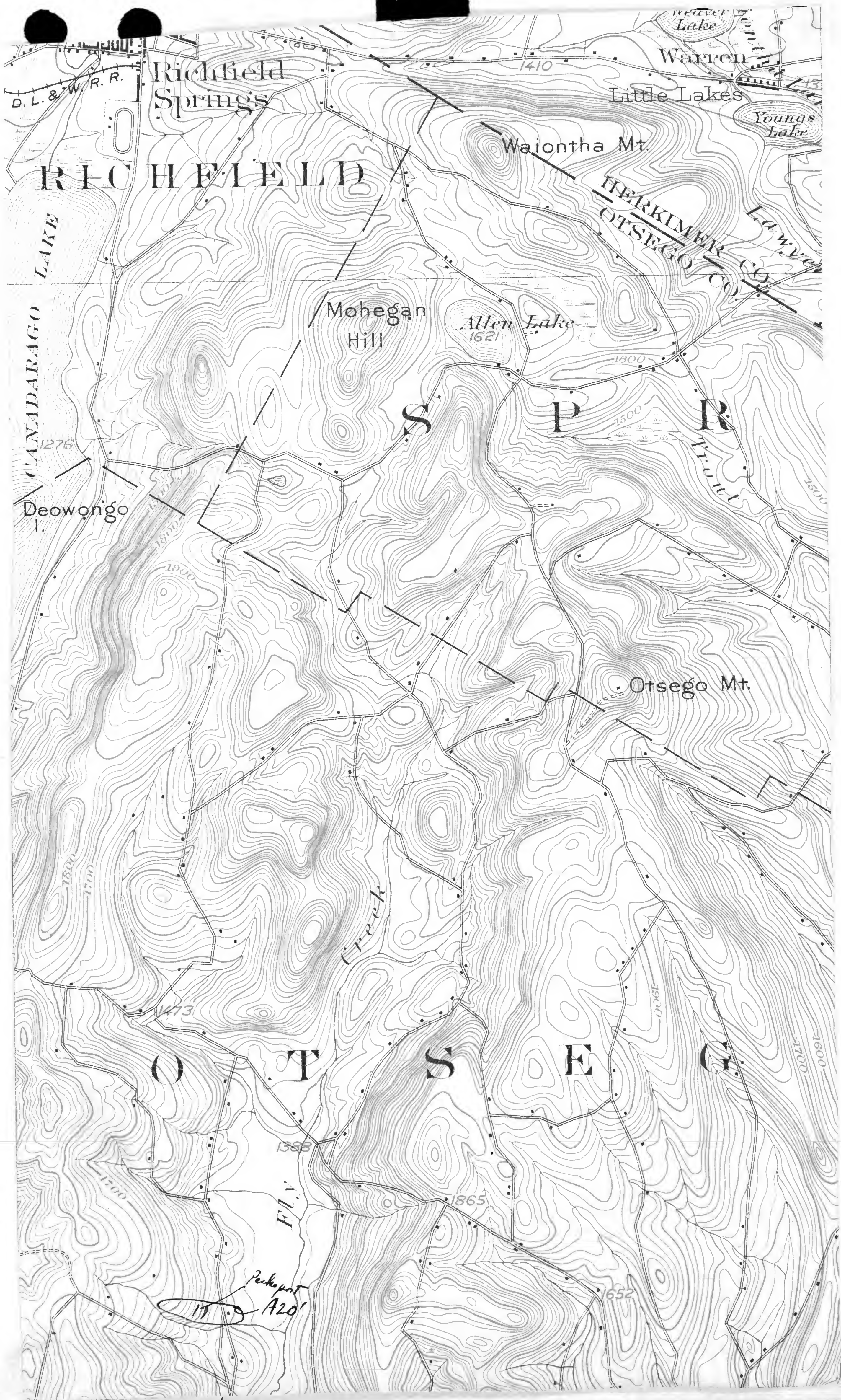


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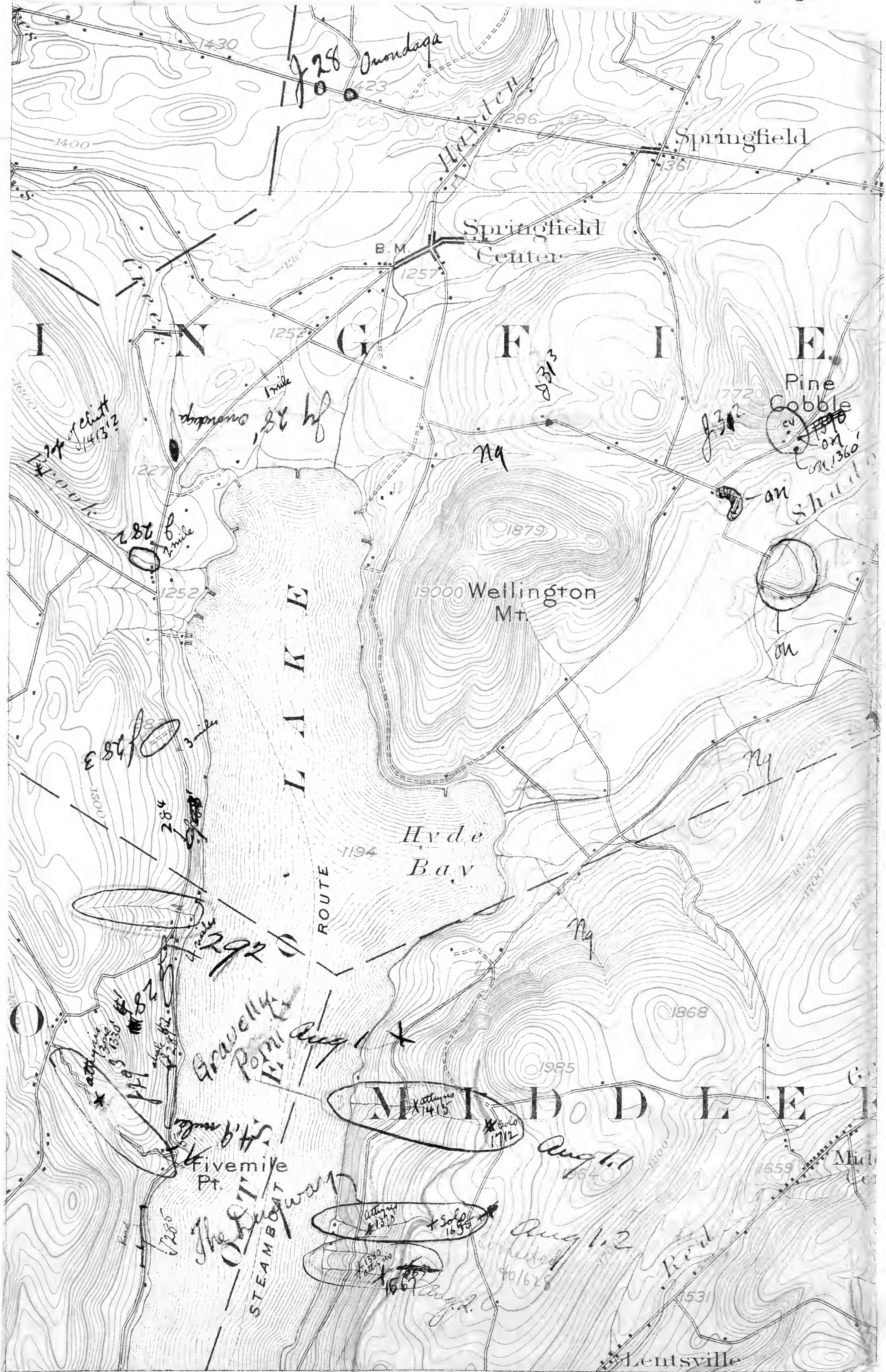
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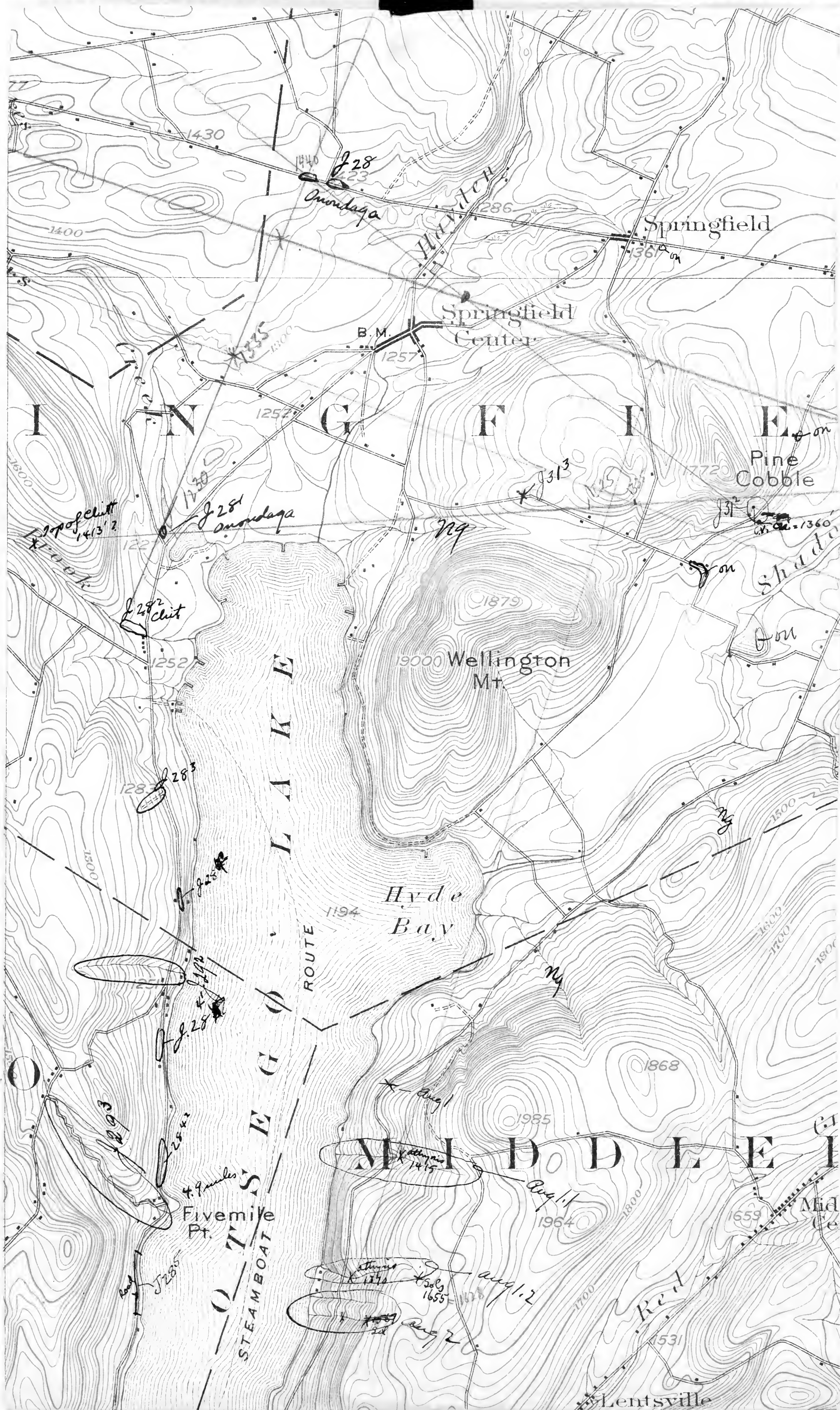
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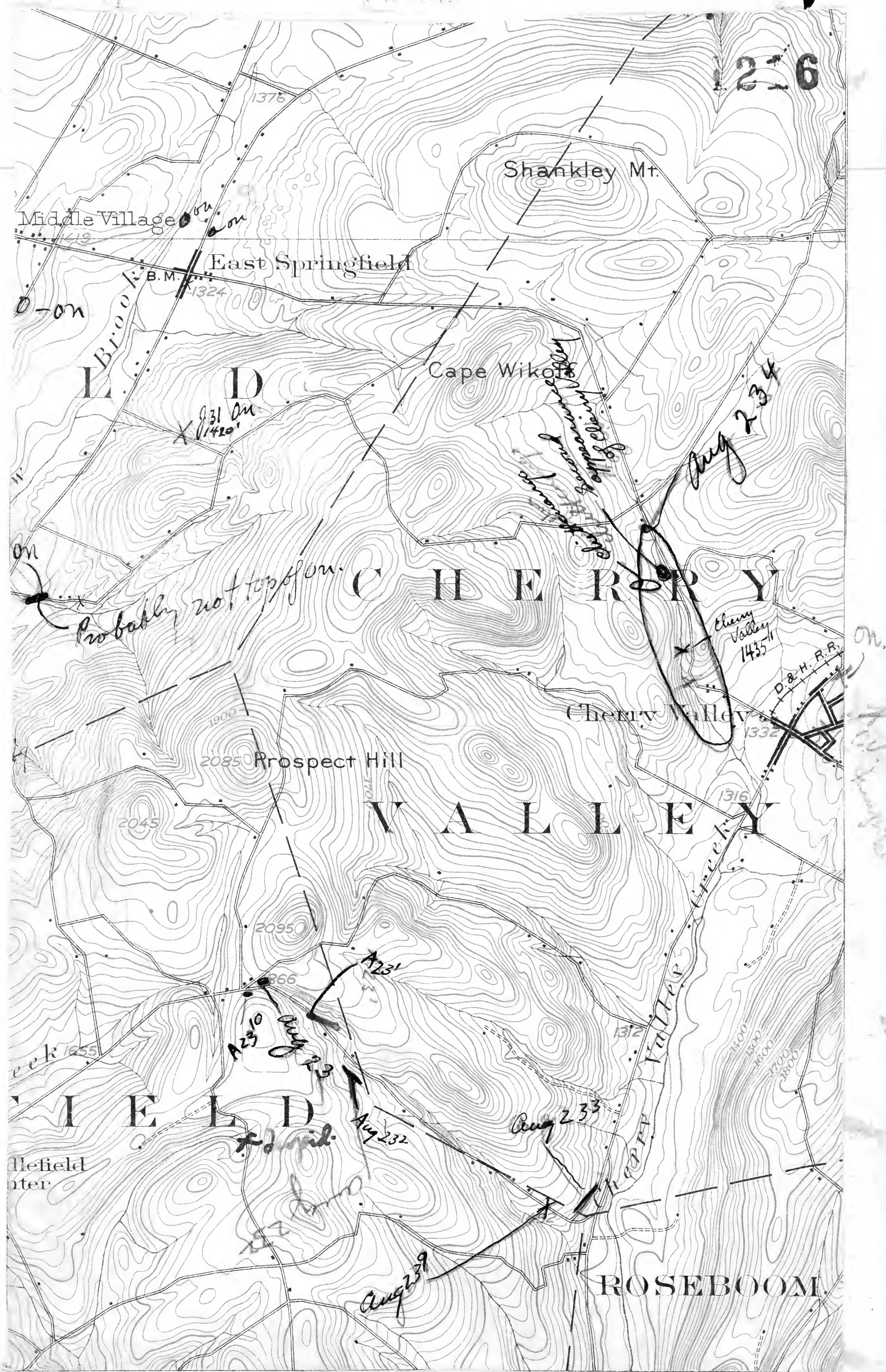
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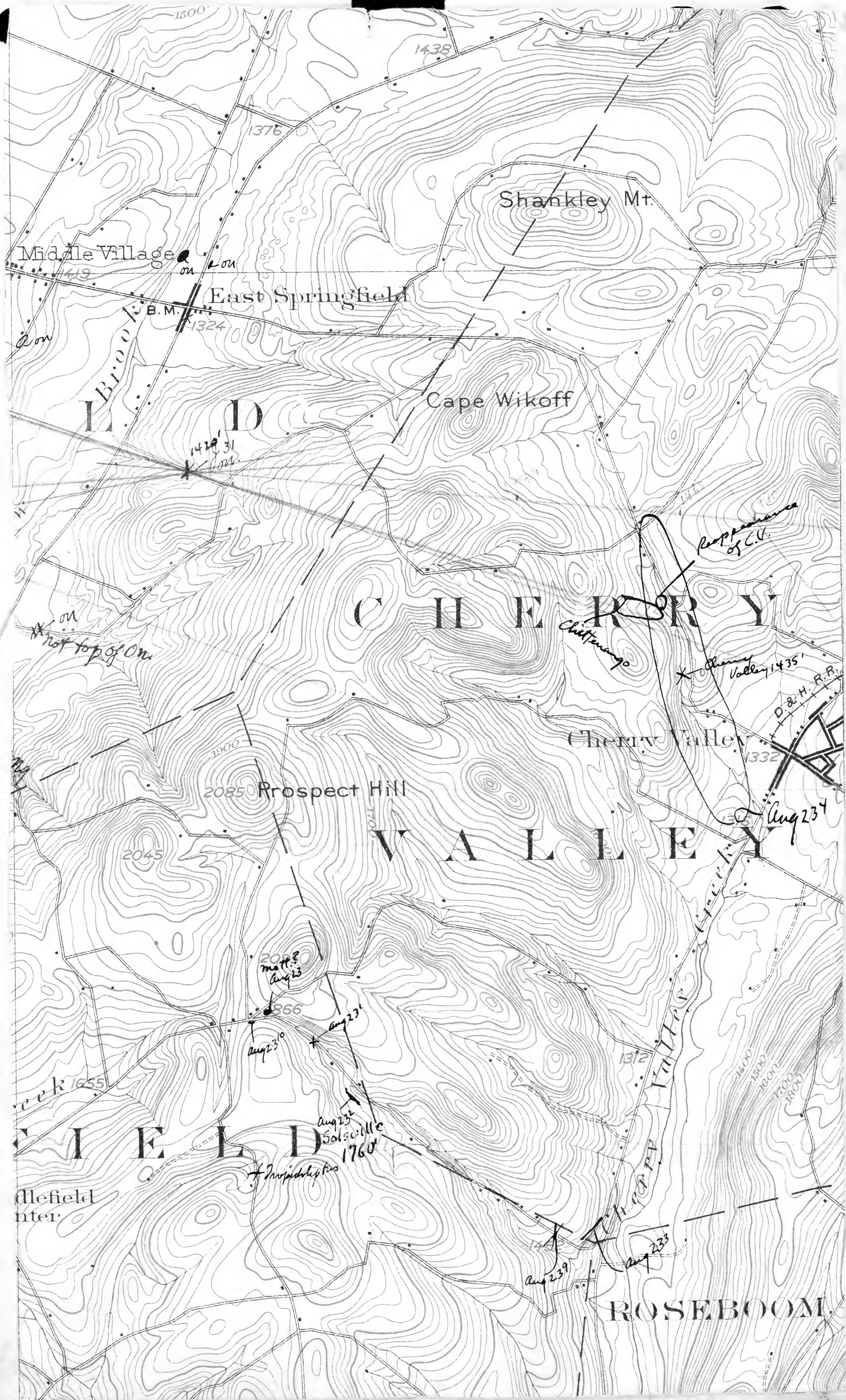
Peckport
17.5 A20

1216









Hamilton

July 28

Along the road between
 Rockwell Springs & the road 2.25
 paces south of Point Line marker is an
 outcrop of G. magnificently bedded, light
 colored, brown, & gray, & brown
 & yellow. It is a very fine
 & good intersection are made
 by bedded by a fine line
 & on the flint. These are
 & are common. Placenta
 & a considerable bed of
 & is very
 Top of the Onondaga.

July 28¹

Measurements started from 4 corners
 in Springfield Center. Between 1.5 and
 1.6 miles is an exposure of the
 Onondaga Flint-bearing

28²

Exposure in the Onondaga - brown
 streak, Stylolites abundant

28³

Short road showing rock for some
 40-50'. Rock breaks into small chips
 weathering to a light grey when dry.
 Streaks white. This is a bed of ss. It is
 very sandy. Only fossil
 seen. Road at 2.8 miles. At 3 miles is
 another small showing in the bank

My step is about 54"
 raised on gulches where it could check
 my hand. Chert right averages about
 5-12"

Road with section
 is 5.575 miles
 from Springfield Center.
 6.55
 5.575
 .975 miles N of 3 mile Pt. is road section

~~28~~
 28⁴ - 3.4 miles 8' exposure, ~~for~~
 intermittent for 2.1 or so, showing
 fissile, soft, sandy shales that
 crumble to thin plates of irregular
 size & outline. When cold they are
 light grey, strongly jointed, suggest
 the bluish lgh. of Spelling. Lively
 chambers of a cephalopod, Leiorhynchus
 (small), crinoid fragments

4.4 - 4.7 Exposures of fresh shale.
 sandy, blocky, fossils very scarce
 joints, fine plates, vertical, also curved,
 and irregular

28⁵ - 5.4 -
 Just south of 5-mile point are about
 0.3 mile of shale exposed. At 5.6 there
 is a road leading up to a house
 and in the gutter of this road
 there 33' exposed. This rock at
 5.6 and in road gutter is coarse,
 breaking into lumps and is quite
 fossiliferous.
 Leiorhynchus? multicastratus
 Sp. truncatus Inopidoleptus
 M. oblongatus C. coronatus
 Atterius sp.

After 33' it is covered for 11' and
 then 70' more of rock are exposed
 making a continuous section of
 about 165'. The uppermost rock is
 rather hard very areaceous,
 irregularly bedded rock.

These exposures & road section are about
 .8675 miles S of 5-mile Pt.

1219

7.00
6.50
1.50

28⁶ is 0.45 miles S of
3 mile Pt.

28⁶ — at 7.10 - 7.25 assembly blue
gray arenaceous shale, full of small
angular lumps. Fossils not abundant
Discontinuous lenses of ss. an inch or
less thick not common. In exposures
Pal. costata
Leiorhynchium cf. multica
Lingula
Distance is 15-20' high

28⁷ - 8.45 miles - Hard shaly ss.
with irregular bedding - Camarotoech

a little north along the side road
arenaceous ss and exposed in
road till at passes there is
a small quarry fossils are
abundant -

Thurgate Paraceras liata
C. coronatus L. pectinata
C. microcostus C. flabellum
Tropidoleptus - large - rather sharp ribs
Parabellodon A. boydi
Camarotoechia

Rock is exposed for about 110' but
the best exposures are of about
55' - 70'. There is a great deal of
cross-bedded ss. near the top.

28⁸ - is a sizable exposure on the
golf links 0.2 miles from road
intersection of 28⁷. Fine irregularly
bedded arenaceous ss. breaking into
irregular slabs. The rock strongly
resembles the Solville at Bridgewater
but one can't be sure of the fauna
A. erectum & Laminaria. Brachygon

Top of Solville
about 1320.

28' is at
8.75 miles

upper part of exposure. A. erectum is
K. f. Alveolata and what appears
to be Borealetia. The top of this
exposure is about 55' above the
road or at 1330-1340'

Part of hotel near
Schoenung

July 29. Fernmore Farm
Edward Saperina Clark estate.
Road on W. side of highway 80 or 83 miles
N of village hnt.
Between 6 and 7 H.h. above Golswille
There is a little platy ss. but most
of the interval is covered. Between
7+8 - there is irregularly fracturing
argillaceous ss. or s. very coarse shale
with large Tropidoleptus. 8-9 same
Tropidoleptus abundant. S. mucronatus
abundant. Rock is exposed up to 16 H.h.
where there is a sharp bend in the
road. The exposures are mostly
the coarse shale rock but there
is much fine sand, platy &
cross-bedded but not having any
great extent. The uppermost 16'
are lumpy sh. with few fossils.
Here were seen Productella (like
that at base of Delphi, Tentaculites, Diplema,
M. pygmaea, small Spirifers (like the
Mottville). Between the Tropidoleptus
and the upper 6' were seen
Bucculcomarginata
Corn. flabellum
Camerozocchia
Spirifer (Mottville)
Pteronotus patulus.

Tropidoleptus

soft green
sh.

55'

not argillaceous
ss.
Draped, in bottom

33'

Covered

15'

Top of hard layer (Solaville?)
Solaville (?)

29' - 200 paces north of the last exposure on road & 20' higher is a small quarry in cross-bedded ss. at base, and a *Spirifer* ss. at top by. about 10' high. This belongs in the section on the road. On hill just behind cone takers estate and intersection with main road, due West (magnetic) 300 paces from top of Solsville to end of exposure.

Due west 40 paces	} all magnetic
N 5 E 100 paces	
S 44 W. 400 paces	
S 77 W.	

From top of Solsville to sharp bend are 27', from bend to state road are 22'. There are 15' of Sol. exposed in road.

282 - Trout Brook
 0 - 350 paces - black Chittenango.
 Between 250 + 350 paces are layers of white streaking shale. At 350 paces on N. side of brook are 75' of shale in a vertical exposure. fissile, crumbling into thin flakes most of it streaked light brown. Some flakes near the top are grey. Concretions common in stream & seen in bank. I believe all of this bank is Chittenango. Saw small *Spirifer* at 1540 paces is another steep bank of about 76'. Here the shale streaks mostly light brown but there are many dips that streak white.

10' above stream-level fossils in the form of small *Stentocyclites* are abundant.

737 paces. Cliffs on N side 100' high.
in bed of stream some streaks
light & grey but seems coarser
than at bridge. At 1062 paces is
a line of concretions. In stream
bed Rock streaks brown.

At 1400 paces is another bank-
rock in stream bed streak brown
33' above stream the rock is
coarser, breaks into thick plates.
streaking white or very light
brown. The rock above 33' above the
stream looks like Cardiff.

After 1500 paces work is commenced.
It reached Brown at 1500. To road
crossing is 1200 paces - Total for
trip is 2700.

29² - 90 pages from Roanoke
small exp. dark grey fissile sh.
Strat. very light & green. Fossils rare
S. h. l. of fisherella, vert., S. mucronata
196 pages 5' of sh. like that below.

293- 5-Mile Point = Mohican canyon
0-3 H.L. covered. Just beyond 1st bridge
is a cascade over (sh.)

3-4 - fine sh. whitish streak

4-7 same - second bridge at 7.

On the stream just S of second
bridge the slope is sandy gravel

rather blocky (bolding) / in
lithology it resembles the Peckport
but less firm. Fossils are rare.

7-12 - same Bridge 3 is at 12
Rocks on roadside above bridge 3

are coarse, lumpy shales having
L. multicastrata, *A. subrotunda*, *S. annulata*
 12-13 - *Leiorhynchus*, *P. triquetra*

13-17 sand shale - after 13 shale
 in roadside disconformities - since creek
 it continues where at 13 it is
 rather coarse

17-19 - opposite 19 there is a cascade
 in the hard sh - saw one fossil

19-21 - Opposite 21 in the roadside
 or 20 ft. in the stream is a cascade
 over coarse arenaceous, dark shale
 on the N bank of the stream are cliffs
 of lumpy sh 10' high which are
 fossiliferous. Here occur: *N. arguta*,
S. mucronatus, *Chonetes mucronatus*,
L. multicastrata, *Orthis*, *Orbiculoides*,
Eulopora, *P. pupillana*. *S. mucronatus*
 most common fossil.

At 23 in road bed is arenaceous,
 lumpy rock with *S. mucronatus*
 in stream at 23 is same kind
 of rock with 5' of rock in bank.

At 29 comes 4th bridge - no rock
 in stream from 23 to 45.

I made it 48 ft. h. to road intersection
 last exposures are 200 paces
 down stream from 4th bridge

29* - low ledges about 5' in field.
 argillaceous ss. few fossils - *P. linearis*
Carbonotoceras = Peck's port

Top of *Orthis* bed at 1330'

23
 11
 12
 127
 1205
 1332

July 30.

From highway bridge to first rock exposed in stream is 363 paces.

0-1 - fine sandstone having a shaly fracture.

1-2 - same - saw no fossils

2-3 - " " " "

3-8 - massive rock becoming harder continually and more massive

The next step brings us to the brink of the falls under the stone bridge. The next step (10) brings us to the bottom of the falls over the second ledge and there are still about 11 feet of rock exposed but heavily bedded irregularly fracturing ss.

8-10 are of heavy ss. rock containing *Trematis* and a small *Camartrophia* but little else. ss. far as I could see. About 20' above the falls (10 ft. main falls) is heavily bedded ~~ss.~~ somewhat calcareous ss. containing *Camartrophia*. *Camartrophia* also occurs at the top of step nine.

10-14 + 2' - Heavy bedded coarse ss. breaking into irregular very thick chunks or plates. Here were seen *Camartrophia* and a large *Spinifer*, suggesting *granulosus* but with a shagreen fold. This may be *Spinifer*.

Upstream from the bridge perhaps 100 yds. is an exposure of the very hard rock. This would be about 8' higher than the highest exposed

Faintly bedded

rock at the second bridge, it is here massive & hard calcareous ss. About 15' above it is an exposure of rock which I think is in place; it is argillaceous with a fine shaly cleavage. *Macrochile macrostoma* was seen here. In the upper hard rocks the *Canavotoceras* are all rusted so when one breaks the rock they are a bright orange. This is true also for the *Spirifer*. I saw no other fossils, although they may occur here. I should say that the uppermost hard ledge is at 1400'. This is the ledge too, I think, which is exposed in the golf course and which I think belongs to the Solsville.

30' —

10-13 H.L. — covered

13-14 — upper 4' exposed — heavy bedded irregularly fracturing ss.

14-15 — same with *Canavotoceras*, *Corn. flabellum*, *Spirifer*.

15-16 — same with *Trinopora* unscripta

16-22 — same rock. I think below top of 22 is a low falls and this appears to be the top of the Solsville (at about 1376').

30² — On the SW bank of the stream 8 H.L. steps from road and 60' above stream is an old quarry about 40' high which is clearly above the Solsville and must represent the Pecksport

380
34
414

Fossils are

L. caninus *M. subolator*
Cym. flabellum *Crinoids*
Camarotoechia *I. caninus*
Rumboceras

The rock in this quarry is a lumpy argillaceous ss. crystalline to irregular pieces. There is some sandstone but mostly it is the softer bluish, crumbly rock.

The most apt description of the upper Solsville is of a stone wall the irregular slabs being laid one on another.

30³

0-1 Hk. Upper 3' or very hard massive sandstone.

1-2 Hk. Same - Ripples - This must be very top of Solsville. It is also exposed (old) on road on S. side of bridge.

2-3' at very top of 3 about 7" of hard ss.

3-4 - Upper 3' in firm shaly ss. which breaks into lumps; this is the bedrock - on bank at this point are about 25' of lumpy arenaceous rock with *R. fimbriata* and *Chonetes scitulus*.

4-5 - cone

4-7 - " *Ammonoidea*, *Camarotoechia*

7-14 - Same hard rocks, sparse in fossils. These rocks have the appearance of the upper Delphi but without fossils. At 14 is a 7' cascade.

$$\begin{array}{r}
 1585 \\
 126 \\
 \hline
 1459
 \end{array}$$

$$\begin{array}{r}
 23 \\
 5 \\
 \hline
 115 \\
 11 \\
 \hline
 126
 \end{array}$$

14-15 - Top of second cascade
rock brought from flat in
stream bed.

304 - Thin ss. in road - no fossils

23 H. fur
base of
gy. to top
of hill 4

305 - Thin quarry + section along ad.
Base of quarry is at about 1456'
This might be somewhere about
in Babylonian road - 1st rock
exposed is about 15' below top of
hill. The rock near the top of the
hill is mostly an arenaceous
platy shale. About 15' above the
bench in the road the rock is
lumpy argillaceous ss. with
E. submarginata, *Palaeonitella*,
constricta, *planata*, *N. angusta*, *Pal.*,
marginata, *Lingula*, *L. pectinata*.

The rock from the base of the
road down to the base of gy.
appears to belong to the gy.

The gy rock is made up of thin &
heavy bedded ss. resembling
that of the Union. gy. but with
much less fossils. Clay pellets
are common in the ss.

On the wall of the gy just opposite
the road leading into it at the
top is a fossiliferous band
of argillaceous ss. with limonite
& clay balls.

Fossils are:

<i>Atthis</i>	<i>gram. absoluta</i>
<i>Camerozoechia</i>	<i>spinifera (large)</i>
<i>Chonetes vicinus</i>	<i>N. bellistriata</i>

Also several loose pieces - *Pentamerites*,
Naaguta, *E. lin. pectinata*,
Pyrochorda? *ternstroemia*

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 92
 93
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 95
 96
 97
 98
 99
 100

170
 17
 187
 1300
 1467
 1459
 28
 2946
 1475

187
 126
 313
 1316
 1415

1290
 16
 1277

1228

Some of the ss. is 1 1/2' thick.

Hand-leveling from intersection
with Cooper's rd. to base of Og
0-9 H.L. covered.
9-10 thin-bedded shaly sand.
10-11 - 3' in side of rd.
11-15 covered.
15-19 - dark sh and cross-bedded ss.
about 7' above 19 - *M. subulata* &
Leiorhynchus are common
19-22 - At 22 *Leiorhynchus* is common
22-23 - same - The *Mottville* *Spinger*
23-24 - *M. concinna*, *Mottville* *Spinger*.
Liaptoria
24-27 - same
27-30 - same
30-31 - very irregularly bedded ss.
31-34 - base of Og.
This section is on thin platy
blue shales and interbedded ss.

July 31 - Went to take a picture of
Salsville on Gulf course - saw
3 huge (badly crushed) cephalopods
and a *Liaptoria*. This is not the
absolute top of the Salsville

July 31 - At 14 H.L. steps in road is
what appears ~~to be the top of the~~ the
Osgondaga. Flashed a level to dip
about one degree. The top of the
Osgondaga is about 16' above the
little bridge where the road
crosses the stream. This puts the
top at 1400. It was just across to
the upper road intersection and
thence the top at just about
1420.

400 paces = 1000' - 330 yds =
3 1/6 inches = 1420'

1229

31' Onondaga exposed in stream bed and roadside - big rocks, but it forms a big flat.

31' - Cherry Valley ls. - 4 liammers thick for total - heavy beds of crumbly ls. separated by shale. The limestone is mottled light grey, with some platy sandy sh. Old beds of limestone are very uneven underneath. The lowest bed of ls.

3" sh. This is smooth, even. 12" exposed light grey, like the sh. Fully. The bulk of the section is an uneven fracture and is crumbly.

6" Limestone and Petchionoceras shale. 7" more exposed. The uppermost bed is about 1' of crumbly shaly ls. The irregularity of the section is very irregular. The exposure is 27' above the road and a spring issues from a joint and at the base of the ls.

On the E. side of the gully is a white house and on the N. side a deserted shack. Between these two is an old road leading SE into the field - 110 paces down the road is the top of the Onondaga. It is also located about 150 paces SSE from house. From the top of the Onondaga to the road made to be about 11'. This makes the Cherry Valley about 38' above the Onondaga.

According to map Cherry Valley must be about 1400'. Top of Onondaga here would be about 1360'.



This exposure is just 0.4 miles
from road intersection

1230

0.9 miles further N is Onondaga
in road at next house on left.

313 - 3' exposure of unfossiliferous
greyish brown shale

On the basis of the Onondaga outcrops
the dip is found to be 100' per
mile to the SW.



Aug 1.

1231

1- Aural is exactly 1 mile from
last gully on E side road from
Aug 1/1. The exposure is about 15'
high of arenaceous grey weathering
dark grey shales of the lower
Bridgewater. Fossils seen were
S. subconatus, flattened Orthoconid,
Leiorhynchus - poor. These shales
have the curved and irregular
jointing like the Pothoport at
Pothoport. These shales are exposed
down to the bridge at A1.1 which
0.3 miles from the little cut at A1.

Aug 1.1

Hand-leveling from Lake -

0-8 - covered

8-9 - Upper part of mine (3') composed
of dark grey irregularly ~~fracturing~~ fracturing
shale - looks like dark Chittanooga
in fracture but is dark grey not
black - for section very thin layers
of sand are visible

9-11 - same - This shale breaks
into thin, irregular brittle plates
Leiorhynchus (much flattened,
fairly coarsely ribbed) is common

11-21 - same but above 20 rock is
getting harder & coarser breaking
into thicker plates.

21-24 - 8' cascade from 24 down
in somewhat harder rock.

24-25 - same

25-26 - covered

26-27 - Lumpy shale much like
lower Delfia at Eaton - here
occurs *S. subconatus*.

27-30 - same - *Leiorhynchus*

$$\begin{array}{r} 31 \\ 155 \\ \hline 171 \end{array}$$

$$\begin{array}{r} 1194 \\ 171 \\ \hline 1365 \\ 1400 \end{array}$$

$$\begin{array}{r} 345 \\ 31 \\ \hline 346 \\ 80 \\ \hline 286 \end{array}$$

$$\begin{array}{r} 1365 \\ 80 \\ \hline 1405 \end{array}$$

10

16

12
260

+ 10' ?
Solsville

275'

section at A1.2

100'
Athysia
zone 100'

Soft
sh. 70'

covered 7'

260
378

32
5
160
16
176
1174
1370
77

77

176
77

1233

Best exposure for bryozoans

August 12 - The Dugway
 0-11 H.L. from the base covered
 1-2 H.L. about upper 3' in the soft
 shale rock.
 2-11 - Lampyrids, crinoid rock.
 Leiorhynchus, N. oblongatus.
 11-13 - Very hard rock with Leiorhynchus -
 13-14 - rock becomes harder and
 at top of 14 first ~~Spiner~~ Spiner
 mudrocks were seen.
 14-15 - At 15, Leiorhynchus curled &
 fragments is common. It appears
 to me to be about the same
 as those lower down which
 are immature. The ones at 15
 are larger like those above. The
 rock here is decidedly firmer
 than that lower down.
 15-24 same - very fossiliferous
 many specimens of a few kinds.
 At 24 just under the bridge
 24-32 - highly fossiliferous rocks
 at 32 Athyris is common
 and here also occurs Rhynchonella
 in some abundance.
 32-34 - at base of 32 shale
 becomes soft & bluish, with
 light brown surface and abundance
 of small Leiorhynchus. The top of
 the Athyris zone is at 1370 and
 is about 100' thick basing on
 S. mucronatus.
 34-38 - same Leiorhynchus large
 shale harder - much like
 that in very lowest part of gully.
 It is almost certainly
 falls from 36.
 38-42 about 3' below 38 rock
 locally hard. but at 42 it is
 rather soft & dark again.

$$\begin{array}{r}
 52 \\
 5 \\
 \hline
 410 \\
 42 \\
 \hline
 452 \\
 1494 \\
 \hline
 1846 \\
 1370 \\
 \hline
 276
 \end{array}$$

42-50 - Shale becoming **1234**
arenaceous and harder. It
is the blocky kind of holding.

50-52 - Same hard blocky arenaceous
sh. *L. pulchra* large.
H. trigulter.

52-59 - same at top of 59 is at
~~59~~ top of 59 is a somewhat
harder layer. Here were
seen

S. mucronatus, and a large *Spinifer*
like that of the Solsville.

Leiorhynchus, *Chonetes scitulus*

59-61 - Mostly argillaceous ss.

and arenaceous & sandy shale.

Leiorhynchus, *A. imbricata*, *H. trigulter*

C. scitulus, *S. mucronatus*, ~~that~~

Leiorhynchus

61-64 - Softish shale becoming harder.

It is all very arenaceous & bit

massive. The shaly fracture.

H. oblongus

64-72 - Here rocks are becoming

heavier at base and are shaly

irregularly at top.

72-82 - This is all in the Solsville

they really are of the hill in the

stream but look as though

some one threw a magnificent

irregular block of rock in the

stream. This is not far from the

top of the Solsville & is at

87 there are *Camerozoechips* in

the rock. At 76 a fine *S. alveata*

was found. Judging by the loose

pieces in the stream for

2 steps farther up, I would

say that the top of the

Solsville must be about

10' higher than 82.

118

59
245
10
255

82
410
44
157
147
1709

98.35
97.4

95

0.2 miles S of Aug 1.2 the *Athyris* bed
is in the road.

1235

Aug 1.3 Opposite Camp Tenimore (0.5 mile)
S of road intersection 2 is an old
Quarry which appears to be Solsville
This Quarry is 0.95 miles north
of road intersection at ~~edge~~
edge of village. 0.1 mile south
of quarry there is a rise in the
road & here the Solsville is
exposed for the last time

August 2

1236

August 12 is the best section as far as *Confinium* exposures of the complete *Calymene* zone and of the section below that zone through the Solsville. South of Aug. 12 are 2 shorter gullies, the first of which I did not go up, but on its sides for at least 20 vertically *Atypus* zone is exposed. This zone is likewise exposed ~~for~~ along the roadside and in the bed of the road on a low rise. In the bed of the road *Tamurus* is common. Hand-leveling the most southerly gully from this road.

1-2 + covered.

2-5 - at top of 5 is a hard ledge forming a base of 6' (4-5H)

5-11 - square top of *Atypus* zone this about 60' above road or at about 1380'. At top of 11 rocks are covered for some distance. Between 18 and 19 starts a steep fall. From 12-56 there are nearly continuous exposures but they are difficult to get at because of the fallen trees. Above 56 the rock is exposed as cliffs in hard lumpy argillaceous. This is the proper part of the Solsville. A large *Parnassia* was seen.

At 60 comes the very ledge of the falls. Above the ledge and the hard thick plates of the middle & upper Solsville.

At 63 comes the top of the Solsville.

$$\begin{array}{r} 64 \\ 5 \\ \hline 320 \\ 32 \\ \hline 352 \end{array}$$

$$\begin{array}{r} 1320 \\ 352 \\ \hline 1672 \end{array}$$

$$\begin{array}{r} 1872 \\ 1580 \\ \hline 292 \end{array}$$

1237

6B-66 - Bluish arenaceous shale, top of the Pecksport. The Solsville thin comes at 1667' and this would make about 292' for the thickness of the rock from the upper part of the Athyris zone to the top of the Solsville. Above 68 the rock is exposed as ledges about 25' high, giving about 50' of Pecksport exposed. Fossils are scarce in this rock. The rock is bluer than that below and that makes the identification of the Pecksport difficult in the face of several heavy beds of slabbied sandstone if it separated by beds of the arenaceous shale about 5-6' apart. The lower Pecksport is not very fossiliferous. I suspect that the highly fossiliferous rock on the Genimore Farm (289 and 287) is really Matville. Probably than the Shannakles would come in with the Inopidolaptus.

137
55
32
1320
1667

Pecksport

55'

1667

Solsville

Mat

287

1380

Athyris zone

In this section the elevations of both the Solsville & Athyris zone appear to be wrong. However what I wanted was a check on the thickness of top of Athyris zone to top of Solsville. This I got and also 55' of Pecksport. I am sure the section at Aug 12 is quite accurate and this should be used to illustrate this series of rock

$$\begin{array}{r}
 154 \\
 232 \\
 \hline
 3 \overline{) 696} \\
 232 \text{ yds}
 \end{array}$$

$$\begin{array}{r}
 290 \\
 2 \\
 \hline
 1450 \\
 580 \\
 145 \\
 \hline
 3 \overline{) 725} \\
 242
 \end{array}$$

Aug 2¹ - Small gully 1.15 miles south of August 2. Did not go up this gully at all. At 1.4 miles on east side road is a large (6') exposure of Bridgewater.

Aug 2² - At 232 paces along road are outcrops of argillaceous ss. This is about 1/2 mile up road. The top of the rock comes at 380 paces. All there were 60' exposed. The top of the Solsville forms this ridge and is 290 paces west of the upper intersection of the road and the one along the ridge. This puts the top of the Solsville at 1400' - 1410' and forms the trace of flat

Aug 2.2² running down to Turnbull farm. In the woods just east of this upper road intersection rocks are exposed. From the road and up 44' the rock is covered.

44' - 60' mostly irregularly bedded argillaceous ss with shaly partings and thin-bedded platy sandstone 60' - 77' thin-bedded platy sandstone. At 60' the rock contains fossils.

Paracyclas livata c.

Diphypt. erectum (like Delphi)

Small *Camarotoechia*

Leptoceras sp.

Small *Spinifer* (like the Mettrick)

Sp. perfoliata

Thin. *Trilobites* was seen on a loose slab at the roadside.

Natty Bumpo's Cave is way above the Solsville and must be somewhere in the section of 230'. In order to locate this I tried an out-section

195

195

195

195

Readings must be
corrected for magnetic
declination & replotted

One station on the tip of the little
point forming Blackbird Bay and
one on the stream at Red Cove

N.B. cave to tip of Blackbird - 570W

N.B. cave to stream at Red Cove - N57W

" " Clark House - N74W.

Kathy B's cave is a remnant of thin
platey con. and angular blocks as near
the stream and saddle and
beaver is a good example of the
places at the top. The whole
display of rock here is about
75 or 80'. The polished blocks have
many of the rounded like stacks
I made it 54 Hb steps from base
of N.B. cave to road intersection
at the Fairmore camp.

Aug 23 - The top of the Solaville is
at about 1150'. Above the road
intersection is at about 1335 feet
The house of the Fairmore farm
sits on a flat formed by the
Solaville.

Aug 24 - The Solaville covers this
area at about 200 paces. Both of
these good sections are excellent
for Solaville. It is also very
good except for the large
boulders and Canard rocks.

Aug 1.3 - Old quarry in Solaville
is 0.1 mile S of road intersection
Top of quarry is about 41'
above the road at about 1245'
1295'. About 0.75 mile south from
the quarry what is near the
top of the Solaville is just on
the roadside at about 1245'.
The top of the Solaville is 7 Hb

35
4
2

41

11504

11504

1240

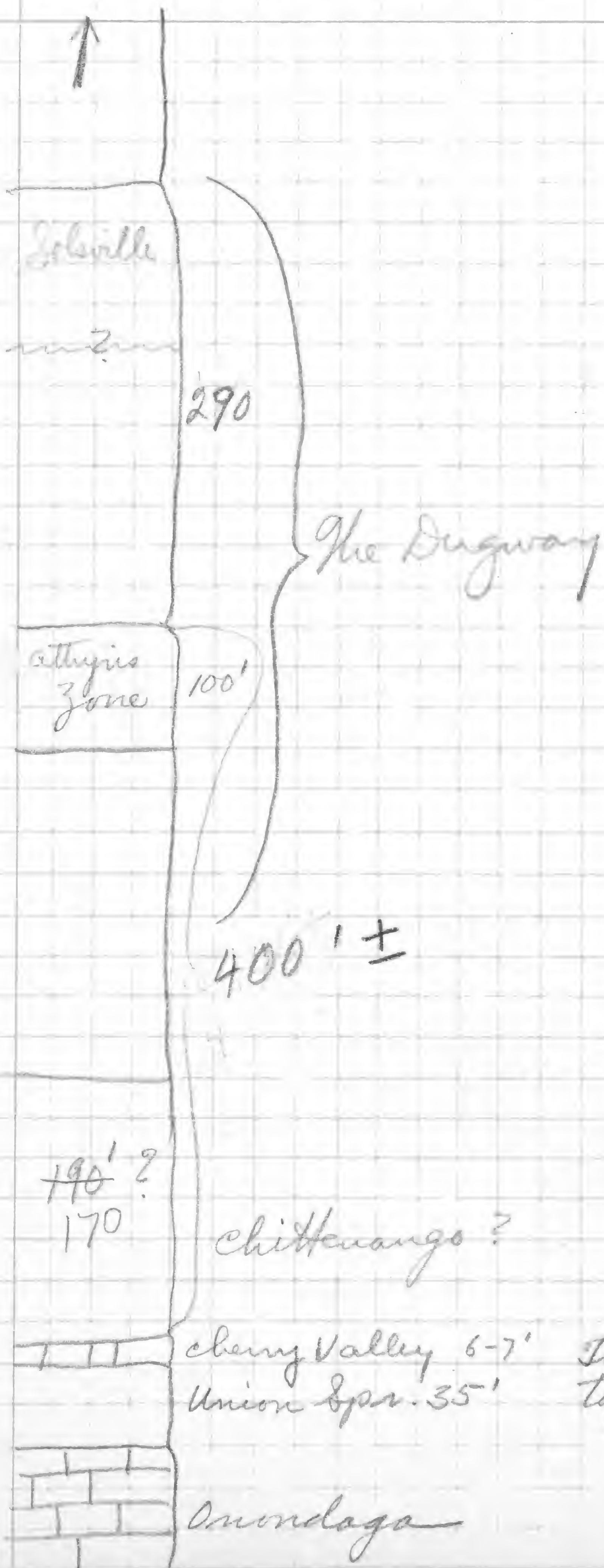
24

steps plus 2' or ~~4~~ 41' high. The
 road lies about 25-30' above the
 lake which makes the elevation
 of the Solaville at ~~1295~~ 1295
 measuring from the lake to the
 floor of the quarry was 11 H.L.,
 or 60 feet, putting road at 1254'
 and top of Solaville at 1295'
 Strike on Solaville is N 68 W 82' to the
 SW.

August 3 - rain - all day

In reworking my notes I find
 as so far, have just 3 reliable
 locations on the Onondaga, which
 are J 31 (1420), J 28', J 28. Locating the Pine
 Cobble exposure at 1360' appears to
 be quite correct. On the basis of these
 exposures I make the strike of
 the Onondaga N 65 W 100' per mile.
 For accurate Solaville locations
 the Dugway, Letherstocking Falls, and
 also Clarke's Bull. 49, read
 pp. 123-124 where he cites
Sp. mucronatus + *Chonetes* in the
 Marcellus 180' above the Onondaga

Columbus as seen from July 28 -
August 2 1241



Total - Onondaga to
Top of Solsville 6735'
287
448

Aug 4.

Shellrock Brook - At 240 paces above and back is a cascade of 5 or 6'. Above the cascade are 10' of rock on the south bank. The rock is coarse sandy shale rock having a rather concretionary structure. Saw no fossils.

Aug 4'

0-1 covered

1-3 - At top of 1 there begins a fairly significant falls. On these 2 steps the rock is argillaceous ss with a wavy fracture and is cross-bedded ss. at the top of 3.

3-5 same kind of rock the shaly parting ss being most abundant. At top of 4 - *P. lida* 4-5 were seen *D. carinata*, the wide variety like at J. 287.

C. boydi

5-8 - at 8 were seen *Canabellina* *M. subcostata*, *P. lirata* & *D. dehayi*

8-13 - saw no fossils but at very top of 13 there was a large *Tropidoleptus*.

13-17 - Gives the upper 5' of which is mostly ss and cross-bedded ss. at the top. This falls contains *D. carinata* (which occurs also at the top), *Gnamptobolus*, *Mod. mytiloides*, *Par. lirata*.

17-21 top of falls and flat in stream. This upper 4 steps was all in thin-bedded ss.

1243

57 paces from brink of falls are 2' of ss.

At 104 paces from brink of falls is a 10' bed of ss.

six sh. *Arceuthobium* thick. Thall. At 203 paces above the falls they are more numerous. In a matter of fact, these bluish shales have been nearly everywhere exposed from 140 paces. Fossils are very rare. *Phylloporina* & *Camaretoechia* being the only ones seen here. At 203 paces and about 4' above stream level are two layers of limonite concretions about 8" apart.

At 221 paces comes the east of the rock. At about 468 paces comes the road.

Aug 4²

370 paces S of stream at Aug 4¹ slides are exposed in road from paces.

Here were seen

Crinoids

C. coronatus

Arceuthobium

Corinate Spizifer

A. boydi

Cor. flabellum

Arceuthobium

T. carinata

M. mystiloides

Pal. constricta

M. rugosa

Arceuthobium

This section ends at 570 paces.

Aug 4³

in stream bed below A 4² there are cascades in a gully. These plates are which I believe belong to the lower part of the Beckspott. Here long *Arceuthobium* is seen. *C. coronatus* in ledges just before entering the southern part of the gorge. There are plates of *Arceuthobium* with large *Camaretoechia*. These remind one of the Solville but the beds are not heavy.



Aug 4th - Ledges of ~~the~~ ^{lower Solaville} ~~at 60'~~ ^{60'}
above the road. 1244

1300
38
1338 - top
of Athyris
zone?
1338
287
1625 - top
of Solaville?

Aug 4th first gully S of Rosebourn.
Ledges by the side of the house
and just behind the house at
about 1300' are in the Athyris zone.
The second ledge was at 2Hh.
2Hh - 15 - mostly covered but at
seven were about 2' belonging to
the Athyris zone. At 14 Comp. the
first of the dark shale above
the Athyris zone. Top of 26 rock
very hard. I hand-leveled up for 30
steps. All above 37 were covered. The
10th step brought me to the house
at 1385 approx. Lost all dirt
blocks of Solaville a little below
here at about say 1650'.

Aug 4th - At 115 paces in road
about 5' of argillaceous
ss. in gully between main road
and side road rocks are
exposed in the bottom are
thinly argillaceous shales
with practically no fossils. All I
saw was a *Lyxoneura*. These
shales are succeeded by thin
bedded sandstones. At the crossing
of road & stream. In these I
saw *Chonetes* ~~exclusively~~
coronatus only.

Aug 5.

Peter B. Hildersleve place
Wayle River

1245

173 paces from highway bridge
first exposed rock. This
is about 15' above the highway
bridge crossing
0-3 1/4 covered.

3-4 - arenaceous sh. soft and
dark abounding in Leiorhynchus
4-9 - same but getting harder in
face of falls.

9-11 - here the rock is argillaceous
ss. with a shaly fracture
Leiorhynchus c. *Tromus*

S. musonytus c. *Leiorhynchus*

11-12 - Between these is the
top of the first falls. *Tromus*
goes down to the top of 12 then
the rock is softer breaking
into smaller pieces.

12-15 - top of 2nd falls in this
falls which are *Leiorhynchus*, *Sp.*
renovatus & *P. rugulata*.
This ledge forms a long flat.

August 51 - Bull, along old road
north of Hildersleve place
Bull crosses road at 1400 - 1410'
146 paces downstream water
falls over a long cascade of
hard irregularly bedded ss.
which contains a great
abundance of *Cornulites flabellus*.
I suspect but am not sure
that this is near the top of
the Solville

Hand-leveling began at 1270

0-1 covered.

1-4 *Sp.* of *Leiorhynchus* shale and

some argillaceous at 2 & 3
but at 4 comes softer, lumpy rock
in a bluff.

1246

4-8 same

8-14 Lumpy, argillaceous
rock with *G. aculeatus*, *P. lirata*,
L. lamar, *Leiorhynchus*, *S. mucronatus*,
This is the same sequence as that
seen on the Silberberg place
~~here is at 14~~ The top of the first falls
here is at 14.

14-15 covered

~~16 and 17 is~~

15-17 - From middle of 16 to
top of 17 is a fall in hard
rock.

17-18 covered.

18-21 - Top of uppermost falls. Here
the rock is very hard & contains
Cornulites in abundance, also
a large *Spinifer*. I would
guess the top of the Silverville
is some 25 or 30' higher yet. or
between 1385 and 1415

Arg 46 is apparently all Peckspot

2 Cornulites
105 C. flabellus
12/15
13/15
14/15
15/15

190

$$\begin{array}{r} 95 \\ 3 \\ \hline 495 \\ 16 \\ \hline 511 \end{array}$$

Cornulites, I. carinatus 1248

at the very top of 94 and base of 95 fossils are very abundant and are typical of the quartzites.

Thin limonite concretions abundant in a rather calcareous rock.

Schuch. I. p. astolia?
Corn. flabellus a. Schuch. S. mucronatus
N. arguta a. I. carinatus

Leptoculites a. Atypis (small)
P. regulata Leptoculites

Top of cascade is between 95 & 96 in a calcareo-argillaceous ss.

96-97 covered

97-98- Dark sandy sh with small concretions

Aug 5³-

Hafedlevelling begun at bridge on road. Downstream from bridge are exposed perhaps 30' of coarse shaly, arenaceous rock containing Leptorhynchus

Upstream 0-13 covered

13-14 coarse arenaceous rock

At 6 upstream there was rock in the stream which suggest ed Soloville. This may have been a drift piece

14-16 covered

16-25 rock at 16 is a humpy soft arenaceous shale. As one progresses upwards to 25 the rocks become more arenaceous and are mostly platy sandstones at 16 a Leptorhynchus was seen

On reexamining the ledge at 6 I believe it is the top of the Soloville. This would put that layer at 1373'

1340
1373'

August 6

33

1249

At 10 above highway are platy ss with abundance of *Chonetes* and *Orthis*. About 10' higher. (About 30' higher still are platy argillaceous ss. with *Paraspirifer*. Lower down about 60' above the road and for 20' down are soft sh. arenaceous shales with *Toxonema* & *Maculites* & *Argisites*. This is the same section as August 4.

Aug 6' - Hand-balling begun at corner of Pleasant Valley ~~9th St~~. At 10 H.T. is a ledge of hard massive arenaceous ss. in stream bed which is the top of the Solville. This ledge is about 2' high. It is covered. Below 9 is a fall about 20' high. 10-11 covered. 11-12 - lower half covered. 12-13 - At top of 13 comes very top of Solville, the large limestones. Very characteristic of the top is just a little south of the bridge being the first crossing of road + stream. This puts the top at 1405' above sea-level. 4' farther up stream and about 7' higher than top of Solville are soft arenaceous shales (no fossils seen). These shales are seen continuously to 1400 pages where there is a layer of hard ss. about 1' thick. Vegetation is so dense here walking is impossible.

$$\begin{array}{r}
 27 \\
 \times 51 \\
 \hline
 135 \\
 1470 \\
 \hline
 1392
 \end{array}$$

10

$$\begin{array}{r}
 1380 \\
 \times 10 \\
 \hline
 13800
 \end{array}$$

140 paces - 238 - Covered.

238 - 242 Thin-bedded platy ss lining banks. At 248 low bluffs of argillaceous ss. line the banks.

248 - 282 - here is a 4' cascade in the ss. for about 10' above the cascade are thin-bedded platy ss. These platy ss. are very argillaceous and seem to make a transition between fine sands and arenaceous shale. They have a heavy, platy fracture like the ss.

282 - 306 - up low cascade which approximates about 16'

306 - 336 mostly covered but at 336 are about 3' of platy sands in bank.

At 341 were seen *Camarotoechia* sp. *supraceras*, *Schuchertella*? or *Chonetes*?

341 - 397 - mostly covered

397 - platy ss.

397 - 444 mostly covered at top and 15' above stream are platy ss. At 467 comes another cascade in drops of about 1/2 ft each. These indicate 10 paces

467 + 14 = 481 top of 2nd cascade. The rocks of these two cascades is predominantly platy & cross-bedded ss. with some lumpy shale. The only fossil seen in place was *P. girata*. At 500 is top of another low cascade which drops 5' from 481 - 500. From 500 - 515 is a low bank in soft, argillaceous shale. *C. scitulus* was the only fossil seen.

$$\begin{array}{r}
 500 \\
 2 \\
 \hline
 1000 \\
 250 \\
 \hline
 1250
 \end{array}$$

$$\begin{array}{r}
 1257 \\
 2 \\
 \hline
 2514 \\
 629 \\
 \hline
 3143 \\
 3 \overline{) 3143} \\
 \underline{1047} \\
 2096 \\
 \underline{2096} \\
 0
 \end{array}
 = 5/8$$

1251

515-567 - brings us to the low cascade. About 2' of rock were covered here. The rock is more arenaceous than below. Here were seen *Camarotoechia*, *Spirifer* like *acuminatus*.
567-600 in some rock at 600 is a 3' ledge of platy and argillaceous lvs. etc. The latter abounds in the *Camarotoechia* type of *Spirifer* (some are huge) could get no good ones. Other fossils are *Spirifer* (*McKillop*) *Camarotoechia*, *Av. fasciculatus*, *Camarotoechia*, *Pal. constricta*.
At 640 pieces of ledge in stream bed about 1 1/2' high of massive calcareous ss. at 720 comes a new bridge. At 750 comes an old broken bridge. At 807 stream and old road cross. At 1257 stream and old road cross again.

I beside the road at the point where the stream and road cross where the *Soloville* is exposed are masses of *Soloville* continuous with the exposure in the stream. Here *Cornulites* *labellus* is abundant. This is definitely the uppermost ledge of the *Soloville* & establishes the *Soloville* at Aug 5'. This uppermost ledge here is not the heavy massive stuff which is a little lower down (5') but here the *Cornulites* bed is the very top and with the soft *Parkesport* over it. Probably if I had seen the real top elsewhere this bed would have been present.

August 6²

Hand-boiling began at 1280'.

0-3- covered

3-4 here were about 3 or 4' of hard ss. containing *Chonetes coronatus*.

4-6- covered

6-8- hard ss.

8-9- covered

9-10- flat and cross-bedded ss. small *Leptæna* and large *Tropidoleptus* were seen.also
C. coronatus
here10-11- flat ss. with *Camerozschia* fossils are scarce.11-12- At top was seen *Tropidoleptus* and *C. macropterus*.At the very top the rock is covered with *Chonetes* of *C. coronatus* type and small *Schuchertella* - also *C. macropterus* *Camerozschia*.

12-14- same, saw no fossils.

14-15- rock shalier - saw no fossils.

15-17- same - saw no fossils.

17-

Aug 6³ - 0.4 mile from road to Cooperstown (mid S. of O'Connell Brook) are exposed 0.3 miles of rock in road gutter. It is at the north end arenaceous, dark shale containing fossils in about the 15th tenth mile of the Nend. Range the rock is coarser being thin-bedded arenaceous ss.

Fossils at the N end are:
Margueta c., *ss.*, *bispinosa*,
T. submarginata, *lingula*
Mod. subulata, *Camerozschia*

1253 3
A grain very much like
sulphur granules, concave,
cylindrical, mod. mytiloides
Pal. concentrica, Pecten-like

Aug. 7.

Hand levelling begun at the bridge
at 1325

0-3 covered.

3-4 at top of 4 is a 2' ledge of hard
massive sandstone. But the
west bank of the stream fully 15'
up on bed of bedded ss.

4-5 covered.

5-6 - heavy bedded ss. abounding
in *Clonopsis coronatus*, contains
also a small *Leptodonta* sp.
unus

6-7 - same

7-8 covered, 8-9 heavy bedded ss.

9-10 covered to top of the ledge
summit 53 (2') with *Concentrica*
and *Productella* 10-11 covered

11-12 in stream bed argillaceous
bluish ss. *Concentrica* &
Camerothecia - for 16' in bank
same.

12-13 - ss & argillaceous ss.

13-14 - ss.

14-15 ss & argillaceous ss with
Camerothecia & *Paracyclas*. Both
rare

15-16 - same 16-17

16-17 - Argillaceous ss and
some *Cylindropsis* ss. Fossils
abundant, mostly *Spiz* -

Sp. mucronatus

Sp. granulatus (like *Sold*)

Sp. lacunifera?

Mod. concentrica

Bygonia

Crinoids

569
87

GA

340
1210
1550

76
5
300

1150
1690
240
1250
300

1310
250
1690

1254
1818 - mostly covered by
the forest. Very poor
Al. ...
Also P. ...

0.92 for true daylight

August 7th Flint gully
Hardscelling begun at 1310
0-16 - covered.

0-16 - covered.

16-17. *argyrogyna* & *aurata* Sp.
maculata & *aurata* etc.

17-18 - 2010

T. carinatus Gifford & *T. pappus*

Grass. *Bisulcata* . 1/2 - 1 inch

the following are the results of the tests made

breaks like shale.

61-62 - same

62-67 - mostly covered

67-68 - platy, dingy laccous ss.

68-72 1/2 Cylind.

1275 - *Platyphragma*

I have not yet seen the family.
 I was at the school on Feb. 1st.

Handwritten text: *Handwritten text, possibly a signature or name, written in cursive script.*

17. *Staphylococcus aureus* (100%)

$$\begin{array}{r}
 122 \\
 \hline
 516 \\
 31 \\
 \hline
 547 \\
 1310 \\
 \hline
 1857
 \end{array}$$

$$\begin{array}{r}
 610 \\
 61 \\
 \hline
 671 \\
 1310 \\
 \hline
 1981
 \end{array}$$

1930

1255

90-91 platy ss.

91-93 shale - 15' above 93

the soft dark shaly ss. contains many large *C. sy. folio*

93-95 same

95-97 fossils abundant

C. dentalis sp. nov.*J. christi**Conarochia*

97-103 - same but contains fossils in this interval

103-108 - same at top of falls

108-114 - which is the top of the falls. Fossils seen in the falls here. *C. nodosa* to *J. cornutus* sp. (like the one in the lower part of the section). The lithology suggests the lower part of the section is mostly shaly at the top of the falls.

114-117 - top of 117 is the base of a second falls.

117-121 - top of falls

121-122 - bridge - at top is hard sh. by ss. with *Therapsid*.*Tentaculites*, *C. cornutus*, and what appear to be *Conarochia*

At 122 comes the road

Centronella occurs at about 1930' or just below the stream & road-crossing

Aug 8

1256 40

Shaly fracturing arenaceous ss. (looks like middle Delphi lithologically exposed on roadside 0.2 mile from top of hill. Fossils are common
Camarotoechia a *Tentaculites*
Rhynchonella *sectifrons* *Athyris* sp.
Beudanticrinus *Schizodus*
Com. flabellus *Tropidoleptus* (small)
T. eximia a *Cosm. truncata*
A. boydi a *D. deKayi*

The main ledges run for 190 paces up the hill, but rock is exposed almost to the top. About 100 paces the rock is mostly platy ss. Here are *C. coronatus*. Toward the top of the hill the rock is arenaceous shale.

Aug 8' - 189 paces from road covered. at 189 are thin-bedded ss in the brook. at 210 paces comes a cascade in the stream and rocks on each side. At 210-244 H.L. and 244' paces comes fossiliferous rock, in the 11' of ~~rock~~ rock in the 1st of steps no fossils were seen. The rock is thin-bedded, rippled ss. Fossils are *C. conjugata*, *Euella*, *Triopha*, *Mattville spirifer*, *Com. flabellus*.
 244 - 269 = 2-3' In the lower part of this step *Sp. mucronatus*
 269 - 287 = 3-4' shaly ss.
 287 - 300 = 4-5' ss. with *Camarotoechia*

$$\begin{array}{r}
 2.6 \overline{) 5280} \\
 \underline{52} \\
 80
 \end{array}$$

(2003

1500

$$\begin{array}{r}
 1200 \\
 \underline{2400} \\
 600 \\
 \underline{3000}
 \end{array}$$

300-348 = 5-8 covered.

12574

348-373 = 8-9 to base of
cascade - soft arenaceous shales
I think this is the ones at Ab³

373-400 = 9-10. Between 9 +
10, about half way is about
1' of calcareous or sandy
l. in 3 layers, fossils common
R. an. p. A. mucronatus
Eynella Eynella
Sp. mucronatus, Eynella
Athysa. At the top of the step in
the ss. N. arguta occurs.

400-436 = 10-11 rather soft
arenaceous sh. - P. angulata?

436-476 = 11-13 - arenaceous
shale - at top are Sp. mucronatus
w. P. disciformella, N. oblongatus

476-499 = 13-14

499-540 = 14-16, at top of step
is arenaceous shale also sandy
in fossils: N. arguta a,
P. constricta, A. ymbonata,
P. emarginata, Loxonema (L)
P. lirata, Sp. mucronatus
Eynella

540-556 = 16-17 some small no
fossils

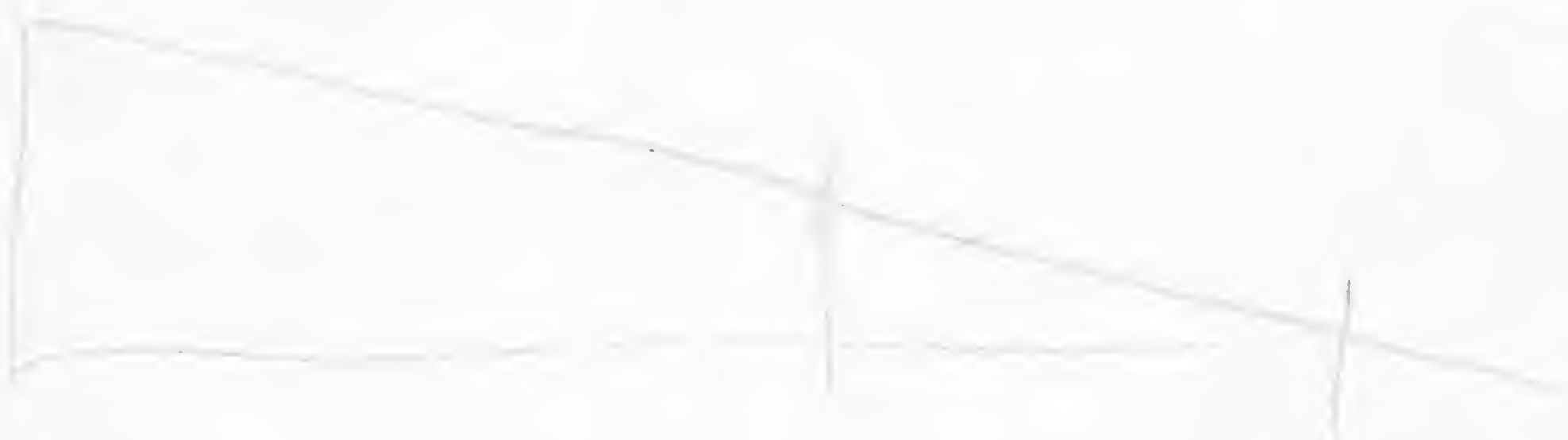
556-576 = 17-18 covered

576-691 = 18-23 - covered except
for bottom 5' where there were
platy ss.

691-918 = 23-33 covered

918-1037 = 33-38 "

1037-1237 - covered



$$\begin{array}{r} 454 \\ \times 2 \\ \hline 908 \\ 908 \\ \hline 908 \\ \times 27 \\ \hline 375 \\ \hline 375 \end{array}$$

Aug 8²

1258

42

143 paces from road ledge of 5' of argillaceous sand - thin bedded. In this ledge large *Tropidolaptes* is common. *Gordiophora*, *Grom. Alberta*? Between 1 and 2 comes a ls. ledge of 4" thick with calcareous concretions weathered out & altered.

2-6 - At top of 6 is bridge and below this were one or 2 ss ledges.

6-8 - ledges of softish blue arenaceous ls. ledge - B. *submarginata*, *Spinifer* (not!) This stream is no good.

Aug 8³ - 150 paces from road ledge correct - at 150 paces are heavy plates of ss. with large *Spinifer*, *P. marginatus*, *G. Alberta*, *Modiolated P. tenuis*, *Cyrtopoda*, *G. bisulcata* sp. (Mottled) *Grom. Alberta* & *G. Alberta* 150-189 cascade

189-238 - covered.

238-253 - At 253 start to see some things. At 296 in stream were some *Grom. Alberta*, *G. Alberta*, *G. Alberta*. At 350 fine highly cross-bedded ss. Above it are some sh. with *P. constans*, *T. submarginata*.

At 369 *Grom. bisulcata*, *C. tenuistriata*.

426 - same - with *G. bisulcata*.

454 - end of rock exposures. Top of section by stream at about 1350'.

1259

84 - Quarry on Smith property 43
located 100 paces down at head
from 2nd forks. Exposed 15-20'
of hard calcareous (slightly) ss.
and soft argillaceous crumbly ss.
Fossils not common - *Leontynele*
goniosticta, *M. arguta*,
L. macroptera ?

August 9
road section 1 mile NE of
Milford

<i>Chon. flabellus</i> n	<i>Pal. maxima</i> n
<i>Chon. syntaxis</i> c	<i>H. obliquatus</i> n
<i>D. debilis</i> n	<i>O. undulata</i> n
<i>G. nodocostata</i> n	<i>S. macronatus</i> n
<i>G. alveata</i> n	<i>E. arcuata</i> n
	<i>E. circularis</i> n

There are about 30' of rocks in
all exposed. At the top of the section
are shell breccias in a very
coarse ss. containing much
iron & some limonite concretions.
A small *Centronella*, like the one
seen at Aug 7 is abundant. This
Centronella zone comes at 1740'
being exposed just at the bend in
the road

Aug 8th - revisited

at 247 ft is covered - at 247
rock is arenaceous with a
shaly part (like middle
riffled) large *Dicpidoleptus* c,
P. lirata, *Pal. maxima*,
Gammusia sp.

247-366 mostly covered in the
stream bed but exposed on the
banks. At 366 rock is again
exposed on the stream bed

At 412 fossils are rather common
Macrochilus hamiltoni,
Comptata, *atae Sprifer*? (Woff)
G. princeps, *Med. concentrica*,
E. perplegia, *C. yucca*,
Com. flabellus, *H. arguta*,
Sp. grandis?

At 480 is a basal calcareous ledge

in stream bed about 1/2 mi by
at 500 paces - a stream
on the left of the stream
the stream bed is a bit
of a dip to the left

2. *Strophomena* - *Strophomena*
C. longipetata - *C. longipetata*
Quadrifidus - *Quadrifidus*
S. carinata - *S. carinata*
Comastrea - *Comastrea*

at 520 - the 1st fork. This rock
when dry is bluish - when
wet it is a deep blue - looking
like a slate - the
the basal layer is a
change to a light blue

at 540 - the right fork. This rock
is a light blue - when
wet it is a deep blue - looking
like a slate - the
the basal layer is a
change to a light blue

at 570 - the right fork. This rock
is a light blue - when
wet it is a deep blue - looking
like a slate - the
the basal layer is a
change to a light blue

Aug 9' - Bully at Middlefield

340 paces covered - a fork in
the stream occurred at about
280 paces. At fork the left fork
is a light blue - when
wet it is a deep blue - looking
like a slate - the
the basal layer is a
change to a light blue

3-6 - same lumpy argillaceous
ss.

6-7 - At 490 ft. 7 is the first
cascade about 8 or 9' high. Below
the ledge fossils of *Comastrea*
C. carinata (large)

Thin bedding of this
material - dip about
1300

15 - 18 - 20 - 22 - 24 - 26 - 28 - 30 - 32 - 34 - 36 - 38 - 40 - 42 - 44 - 46 - 48 - 50 - 52 - 54 - 56 - 58 - 60 - 62 - 64 - 66 - 68 - 70 - 72 - 74 - 76 - 78 - 80 - 82 - 84 - 86 - 88 - 90 - 92 - 94 - 96 - 98 - 100 - 102 - 104 - 106 - 108 - 110 - 112 - 114 - 116 - 118 - 120 - 122 - 124 - 126 - 128 - 130 - 132 - 134 - 136 - 138 - 140 - 142 - 144 - 146 - 148 - 150 - 152 - 154 - 156 - 158 - 160 - 162 - 164 - 166 - 168 - 170 - 172 - 174 - 176 - 178 - 180 - 182 - 184 - 186 - 188 - 190 - 192 - 194 - 196 - 198 - 200 - 202 - 204 - 206 - 208 - 210 - 212 - 214 - 216 - 218 - 220 - 222 - 224 - 226 - 228 - 230 - 232 - 234 - 236 - 238 - 240 - 242 - 244 - 246 - 248 - 250 - 252 - 254 - 256 - 258 - 260 - 262 - 264 - 266 - 268 - 270 - 272 - 274 - 276 - 278 - 280 - 282 - 284 - 286 - 288 - 290 - 292 - 294 - 296 - 298 - 300 - 302 - 304 - 306 - 308 - 310 - 312 - 314 - 316 - 318 - 320 - 322 - 324 - 326 - 328 - 330 - 332 - 334 - 336 - 338 - 340 - 342 - 344 - 346 - 348 - 350 - 352 - 354 - 356 - 358 - 360 - 362 - 364 - 366 - 368 - 370 - 372 - 374 - 376 - 378 - 380 - 382 - 384 - 386 - 388 - 390 - 392 - 394 - 396 - 398 - 400 - 402 - 404 - 406 - 408 - 410 - 412 - 414 - 416 - 418 - 420 - 422 - 424 - 426 - 428 - 430 - 432 - 434 - 436 - 438 - 440 - 442 - 444 - 446 - 448 - 450 - 452 - 454 - 456 - 458 - 460 - 462 - 464 - 466 - 468 - 470 - 472 - 474 - 476 - 478 - 480 - 482 - 484 - 486 - 488 - 490 - 492 - 494 - 496 - 498 - 500 - 502 - 504 - 506 - 508 - 510 - 512 - 514 - 516 - 518 - 520 - 522 - 524 - 526 - 528 - 530 - 532 - 534 - 536 - 538 - 540 - 542 - 544 - 546 - 548 - 550 - 552 - 554 - 556 - 558 - 560 - 562 - 564 - 566 - 568 - 570 - 572 - 574 - 576 - 578 - 580 - 582 - 584 - 586 - 588 - 590 - 592 - 594 - 596 - 598 - 600 - 602 - 604 - 606 - 608 - 610 - 612 - 614 - 616 - 618 - 620 - 622 - 624 - 626 - 628 - 630 - 632 - 634 - 636 - 638 - 640 - 642 - 644 - 646 - 648 - 650 - 652 - 654 - 656 - 658 - 660 - 662 - 664 - 666 - 668 - 670 - 672 - 674 - 676 - 678 - 680 - 682 - 684 - 686 - 688 - 690 - 692 - 694 - 696 - 698 - 700 - 702 - 704 - 706 - 708 - 710 - 712 - 714 - 716 - 718 - 720 - 722 - 724 - 726 - 728 - 730 - 732 - 734 - 736 - 738 - 740 - 742 - 744 - 746 - 748 - 750 - 752 - 754 - 756 - 758 - 760 - 762 - 764 - 766 - 768 - 770 - 772 - 774 - 776 - 778 - 780 - 782 - 784 - 786 - 788 - 790 - 792 - 794 - 796 - 798 - 800 - 802 - 804 - 806 - 808 - 810 - 812 - 814 - 816 - 818 - 820 - 822 - 824 - 826 - 828 - 830 - 832 - 834 - 836 - 838 - 840 - 842 - 844 - 846 - 848 - 850 - 852 - 854 - 856 - 858 - 860 - 862 - 864 - 866 - 868 - 870 - 872 - 874 - 876 - 878 - 880 - 882 - 884 - 886 - 888 - 890 - 892 - 894 - 896 - 898 - 900 - 902 - 904 - 906 - 908 - 910 - 912 - 914 - 916 - 918 - 920 - 922 - 924 - 926 - 928 - 930 - 932 - 934 - 936 - 938 - 940 - 942 - 944 - 946 - 948 - 950 - 952 - 954 - 956 - 958 - 960 - 962 - 964 - 966 - 968 - 970 - 972 - 974 - 976 - 978 - 980 - 982 - 984 - 986 - 988 - 990 - 992 - 994 - 996 - 998 - 1000 - 1002 - 1004 - 1006 - 1008 - 1010 - 1012 - 1014 - 1016 - 1018 - 1020 - 1022 - 1024 - 1026 - 1028 - 1030 - 1032 - 1034 - 1036 - 1038 - 1040 - 1042 - 1044 - 1046 - 1048 - 1050 - 1052 - 1054 - 1056 - 1058 - 1060 - 1062 - 1064 - 1066 - 1068 - 1070 - 1072 - 1074 - 1076 - 1078 - 1080 - 1082 - 1084 - 1086 - 1088 - 1090 - 1092 - 1094 - 1096 - 1098 - 1100 - 1102 - 1104 - 1106 - 1108 - 1110 - 1112 - 1114 - 1116 - 1118 - 1120 - 1122 - 1124 - 1126 - 1128 - 1130 - 1132 - 1134 - 1136 - 1138 - 1140 - 1142 - 1144 - 1146 - 1148 - 1150 - 1152 - 1154 - 1156 - 1158 - 1160 - 1162 - 1164 - 1166 - 1168 - 1170 - 1172 - 1174 - 1176 - 1178 - 1180 - 1182 - 1184 - 1186 - 1188 - 1190 - 1192 - 1194 - 1196 - 1198 - 1200 - 1202 - 1204 - 1206 - 1208 - 1210 - 1212 - 1214 - 1216 - 1218 - 1220 - 1222 - 1224 - 1226 - 1228 - 1230 - 1232 - 1234 - 1236 - 1238 - 1240 - 1242 - 1244 - 1246 - 1248 - 1250 - 1252 - 1254 - 1256 - 1258 - 1260 - 1262 - 1264 - 1266 - 1268 - 1270 - 1272 - 1274 - 1276 - 1278 - 1280 - 1282 - 1284 - 1286 - 1288 - 1290 - 1292 - 1294 - 1296 - 1298 - 1300 - 1302 - 1304 - 1306 - 1308 - 1310 - 1312 - 1314 - 1316 - 1318 - 1320 - 1322 - 1324 - 1326 - 1328 - 1330 - 1332 - 1334 - 1336 - 1338 - 1340 - 1342 - 1344 - 1346 - 1348 - 1350 - 1352 - 1354 - 1356 - 1358 - 1360 - 1362 - 1364 - 1366 - 1368 - 1370 - 1372 - 1374 - 1376 - 1378 - 1380 - 1382 - 1384 - 1386 - 1388 - 1390 - 1392 - 1394 - 1396 - 1398 - 1400 - 1402 - 1404 - 1406 - 1408 - 1410 - 1412 - 1414 - 1416 - 1418 - 1420 - 1422 - 1424 - 1426 - 1428 - 1430 - 1432 - 1434 - 1436 - 1438 - 1440 - 1442 - 1444 - 1446 - 1448 - 1450 - 1452 - 1454 - 1456 - 1458 - 1460 - 1462 - 1464 - 1466 - 1468 - 1470 - 1472 - 1474 - 1476 - 1478 - 1480 - 1482 - 1484 - 1486 - 1488 - 1490 - 1492 - 1494 - 1496 - 1498 - 1500 - 1502 - 1504 - 1506 - 1508 - 1510 - 1512 - 1514 - 1516 - 1518 - 1520 - 1522 - 1524 - 1526 - 1528 - 1530 - 1532 - 1534 - 1536 - 1538 - 1540 - 1542 - 1544 - 1546 - 1548 - 1550 - 1552 - 1554 - 1556 - 15

18-19 - 1st row, no black rock. X

19-21 - In place at 19
the individual stone rollers
could be seen on the top
of the wall.

[illegible]

23-24/ - At Nap. Th. oblongatus,
Leiorhynchus & The G. & L. spp.

24-25. Sandstone in a place
not far from the water
bed of the lake.

25-290 Top of falls on plot 53.

29-31 *Agrostis* sp. L.

31-32 a) top of 32 basin
another long cascade

37-38 - same rock.

38-40 - " " " but top is
heavy ss. Top of section
comes at about J48 in platey
sandstone. Above the last
falls the stream flattens
out and exposures are to be
had only along the side of
the stream. This is an excellent
section but fossils are not
abundant except in the lower
part of the section. I am
tempted with the notion that
Gualveata bed at top base
might be near the top of

the Mettville but clearest 48
it is 700 feet above the
holoville. The top of the section
is a little westward of the first
house on the road beyond the
village or at about 1560' above sea-
level. Section starts 250 paces E of
last house in village as parallel to
the road, which joins the first
outcrops at about 1900'

1264

Aug 9th - Thin bedded platy ss. whose
top is 80' above the road. *Camastorhynchus*
is abundant. *Leiopteria*, *Carinatus*
N. arguta, *Corn. flabellus*.

89.1
88.75
0.35

In second gully visited Aug 10 look for *Centronella* at 1540
In third gully *Centronella* at 1340. 1265
at West Hill about 1470-90.

in 50 paces across bed
dropped 3' making a dip
of about 120' per mile

Aug 10

0.35 miles from point where
over the road & R.R. cross in
southern part of Coopersburg
village up on the side of the
road and up the hill.

Fossils in the roadcut
N. arguta a. *H. oblongatus*
Schuchertella *C. scitellus*
Pisidium *Cymmenonatus*
Com. flabellus *P. rugulata*?
Sp. n. tt. *Spinifer* large

The rock here is chiefly irregularly bedded dark bluish gray argillaceous or coarse grained shale with a lumpy and shaly fracture. There is a thin bed of about 10" in the midst of the section. This rock must be purplish & brown.

About 85' up the hillside is a huge quarry very much like the one on the east side of the lake near the cemetery. This quarry like the other presents all the features seen in the University quarry at Hamilton. It consists of interbedded argillaceous or coarse shales of a dark bluish gray color and heavy irregularly bedded coarse sandstones. Unlike the quarry at Hamilton fossils here are scarce. In the dark shaly ss. carbonized plant remains are abundant. On the

3 mi 125' 1250' 40' 2
off on 2 side
Clack's Dy

Way in Sulgville on east
side of lake is the John
Woods Bay. The Clark Dyke

Edwin Adams Quarry
Slope below the quarry possibly
under some *S. bisulcata*
Camerozschia Tentaculata

1266

Geophina
sp. *peruviana*.
On the quarry face layers of
stone boulders and outbed
bedding can be seen. These
apparently occur throughout the
section. From what I have seen
in the Copperstown region I would
say that the Ludlowville and
Pamunkey are quite inseparable
shale pebbles abound in the top of
the quarry. This quarry must be high
up in the Pamunkey. An interesting
feature of this section is the
presence of large thin shelled
shells of *Geophina* all filled by
sp. *peruviana*.
On road is at least 60' high

Aug 10' - The Jams

Pacing from lower road - 0-525
covered. At 525 is a ledge of platy ss
in stream 6" high. At 547 is
similar rock and there are egg
shells in the stream & sides
of the gorge. Handwelling was
started here.
On 1 - bluish gray platy, argillaceous
ss.

1-2 - At 2' up on 2 the rock
is fossiliferous. *Camerozschia*
& sp. *granulosus* are common
on the ledges at 2 I saw no
fossils.

2-3 - covered

3-4 Argillaceous ss. - no fossils
4-6 covered in stream bed
on bank are bluish sh. 1267
6-7 - covered in stream bed

In the E. bank of the stream
10' above 7 and argillaceous
ss. with a slightly fracture
having fossils.

Corn. flabellus. Sp. Mottville &
Hyassa-like clam. Cl. syntaxis
Mam. constricta

O. undulata. This all suggests
the road-cut at A9

7-9 - bluish arenaceous sh +
ss.

9-10 - arenaceous rock fracturing
like sh. Mottville Sp. Sp. muricata
Salinella, H. erectum, Cl.
syntaxis, S. bisulcata, Edmondia
B. sinuata

10-11 - covered in stream bed
at top of 12 comes first
conglomerate

12-13 + 1/2' - top of cascade which
is just 6' high. The top
is supported by 6" of shell
bed. Below the Becciana
Mottville Sp. H. erectum,
S. granulosa.

In the breccia were seen
C. syntaxis, Mottville Sp.
Sp. muricata, Centralla
which is rare.

13-20 - brings up to top of road
cascade. It is dark very sandy
shaly fracturing rock. I
saw no fossils here

20-23. coarse shaly ss. at
top of 23 is a hard layer
nearly a foot thick
abounding in Spongia

370
2

640
160
320
320

35
12
12
12

1365
121
1244

? granular. Other fossils are
P. boudi. Crinella 1268
W. Hille sp. Don. Ham.
A. spiriferoides. Cam. flabellus
Strophomena

24-25 platy ss. with S. baulkida
B. baulkida

25-26 - dm. mudst of 26 strong
rolling. At top of 26 C. syntaxis
H. bellis & iosta, W. Hille sp.,
Edanondia?

26-28 - arenaceous sh + ss. Top
of 28 cross bedded ss, a stone
roller with S. circularis

28-29 Top of cascade is shaly ss.
Rock exposed farther up
stream.

29-31 - platy ss. At top of 31

fossils are abundant

C. syntaxis Edanondia

W. Hille sp. Clams?

Lentacutylus S. modocostata

31-32 platy ss.

~~at~~ for about 5' above 32

arenaceous shales are
exposed, dark blue grey without
fossils

32-35 - bluish shales in banks

Exposures not continuous

Pal. maxima A. spiriferoides

Ham. alveata S. mucronatus

Pal. emarginata S. nuttall

" contracta Parahellodon ham.

C. hemisphaerica I. caninus

I came out on road 320 paces
west of 1st. house and this put
step 35 at 1365. This puts the
Centronella bed at 1244'. I saw
nothing in this section to indicate
that I was above the Ludlowville

Aug 11-

Oreaceous shales of a blue
gray color breaking into irregular
plates

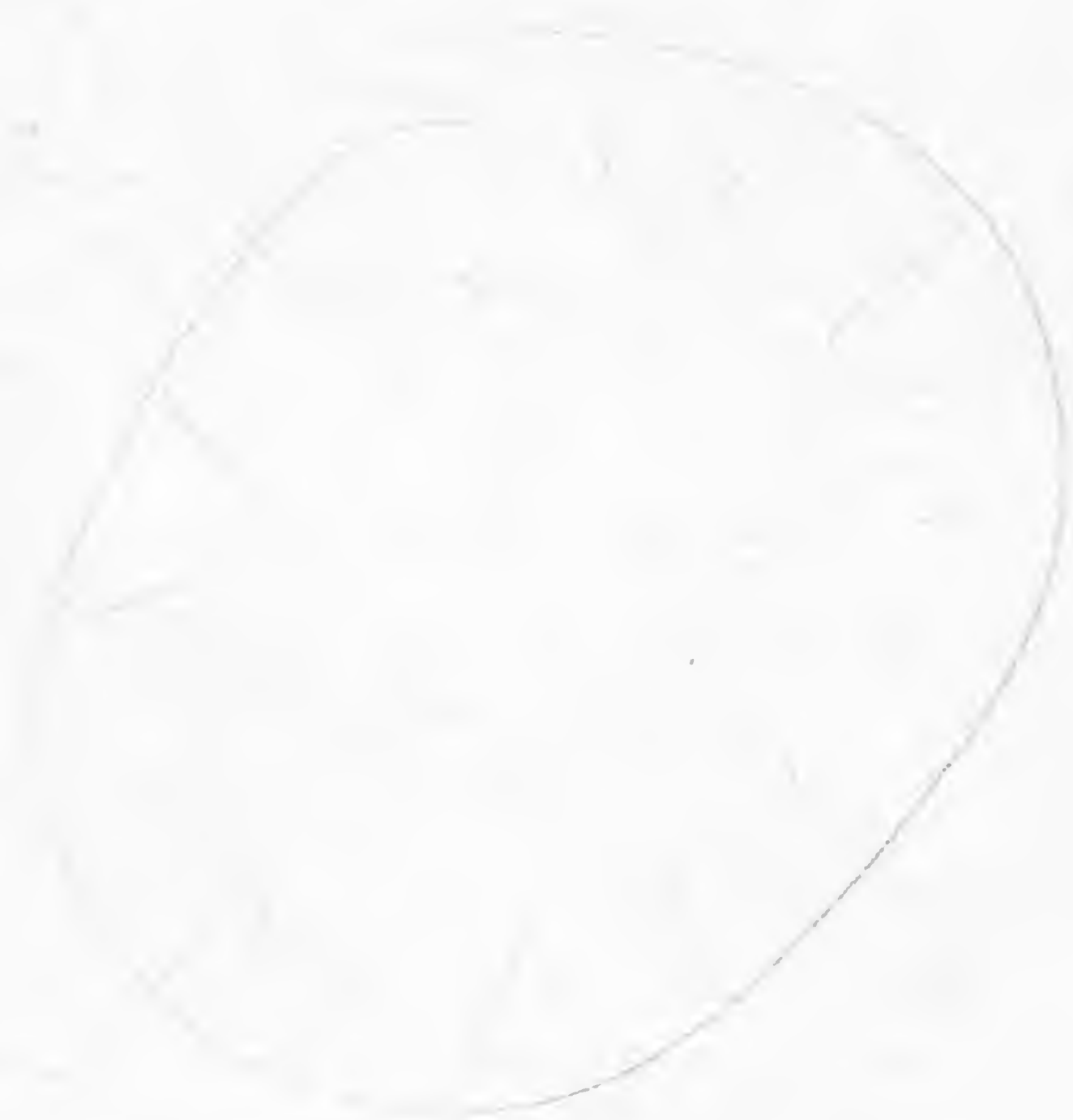
<i>J. carinata</i>	<i>Sp. mucronatus</i>
<i>C. coronatus</i>	<i>P. maxima</i>
<i>C. mucronatus</i>	<i>S. fullius</i>
<i>Schuchertella</i>	(like <i>Moscow</i> gully)
<i>R. vancouveri</i>	<i>C. scitulus</i>
<i>S. finchii</i>	<i>M. concinna</i>
<i>P. mitta</i>	<i>T. munitus</i>
<i>M. concentric</i>	<i>S. granulatus</i>
<i>E. punctata</i>	<i>E. Rucklaueri</i>

These shales are typical lower
Moscow having the characteristic
blue color and fauna. They are
exposed in the small brook very well
but are to be seen at their best
along the Edson covers road from
the Gully westward to the top of the
hill. I should say these rocks
correspond to the section in
Moscow gully at its entrance.
On the stream 80 or 90' of rock are
exposed.

Aug 11' Hinman Hollow

700 paces downstream is a 1 foot
layer of very heavy ss. capped
by about 10" of sandy limestone
with abundance of fossils.
Clay balls occur at the contact
of the ls. & ss. Here are
S. granulatus, *S. erectum*, *C.*
septalis, *Mottville* sp.
15 paces upstream where are
Schuchertella

90 paces downstream



Aug 11. Hinnman Hollow - 200
paces downstream is hard ledge
of ss & ls. Between here and
bridge rock is sandy sh. with
S. ponderosa, *M. Hille* sp.,
G. cuneatus.

At the bridge and at about
1310' are calcareous sh &
sandy ls. with *C. impressa*.
This ledge the Portland Point
extends upstream (up dip) to
second bridge. It is about
4' of hard rock. *Centronella* is
quite common.

The discovery of the Portland
Point helps greatly in the
interpretation of this quadrangle.
This bed (P.P.) apparently comes
about 100 feet above the
first *Centronella* (small) zone.
I think these *Centronella*
in the first zone are another
species than *C. impressa*.
According to estimates the
Moscow should be about
300'. The section on the "Jam"
is clearly the upper part of the
Ludlowville. I do not have
the faintest idea where the
contact of the Shanestales &
Ludlowville might come. The
two sections seem utterly
indistinguishable.

Aug. 12th Morning - Thunder storms

1271

Fossils seen in the Portland Pt.

C. impressa *D. marginata*

R. vanuxemi *V. pustulosa*

T. carinatus *L. purpurina*

B. mucronatus

C. coronatus

The exposure at the bridge is in a small cut on the upstream side on the SA corner. I believe the whole section is exposed here about 70' in all or about 5' 10' to 6' of rock. The rock has very hard bluish sandy ls. or calcareous ss. weathering to a soft brown ss. All of the beds are heavy and massive. Toward the top the sand is more prominent. *Centronella* appears to range through the whole sequence and is quite common here, more so than anywhere else I have been. About this rock zone the very fossiliferous bluish shales. *Vitulina* was seen in next to the ~~last~~ ~~top~~ bottom bed exposed at the bridge.

A little ~~of the~~ ~~bed~~ downstream from the 2nd bridge the heavy ls. were examined

on the shale on the uppermost
bed of ls. we see

1272

<i>A. spiniferoides</i>	<i>P. ann.</i>
<i>G. alveolata</i> ?	<i>L. perfoliata</i>
<i>R. vanuxemi</i>	<i>M. concentrica</i>
<i>Sp. mucronatus</i>	<i>Pholidostrophia</i>
<i>G. granulosa</i>	<i>P. lanceolata</i>
<i>R. fimbriata</i>	<i>J. cuneatus</i>
<i>A. brucei</i>	<i>D. acuminata</i>
<i>G. ann. constricta</i>	<i>C. bellistriata</i>
<i>Cinctaria</i>	<i>E. lincklaeni</i>

Aug 12 - Fossils along rd. to
Beverly Pond -

<i>M. bellistriata</i>	<i>M. mytiloides</i>
<i>P. fimbria</i>	<i>C. constricta</i>
<i>A. boothi</i>	<i>J. cuneatus</i>
<i>S. cuneatus</i>	<i>Sp. mucronatus</i>
<i>R. fimbriata</i>	<i>A. umbonata</i>
<i>C. hemistriata</i>	<i>A. spiniferoides</i>
<i>P. vanuxemi</i>	<i>E. lincklaeni</i>
<i>M. concentrica</i>	<i>J. epigua</i>
<i>E. type</i>	<i>M. oblongatus</i>
	<i>C. scitulum</i>

The top of this outcrop is
about 1600-1620' and possibly
40-60' are exposed. It is all
Moscow.

At New Milford Centronella
ranged thru the entire
Portland Point

J28⁷ revisited - Top of Soloville
is 20' above road intersection

At the eighth step above the 1273

Soloville fossils abound

Camarotoechia sp. *marginatus*

Delphyodontella sp. *erectum*

A. boydi sp. *marginatus* a

at top of eight were some

limonite concretions

8-9 - In this interval *Trachydictya*
became abundant.

9-10 - same

~~same~~ *P. maxima*, *G. lobata*

T. submarginata, *P. linearis*

Camarotoechia, sp. *marginatus*

At very top of 10 some platy ss.

with *P. chigata* & *Camarotoechia*

In the midst of 10 & 11 about

half-way the rock becomes soft
arenaceous sh. with *Mottella* sp.

11-12 - blue sh but at top thin ss.

12-13 - platy ss.

13-15 argillaceous ss. platy ss.

15-16 - At top of 16 in argillaceous

ss were found *Pholidops*

Cypriocardella, *Mott. sp.*, *Pambesia*

Panuka. I have the feeling

that this is the Delphi.

Possibly the top of the Mott-

vill is the platy ss. between

11 & 12.

15-16 - *D. dekayi*, *Tentaculite*

Ostracodes.

all 41 above 1273

covered

30'

Sols
10'

Aug 13.

1274

Paced road upstream from
road intersection 300 paces
where centered stream. There
are first outcrops. Road-
levelling begins there at about
1370'.

0-1 - platy shaly ss and shaly ss
the latter with flat-sided
snails, *T. carinatus*, *C. coronatus*
and *Camarotoechia*

1-2 - Shaly ss and calcareous
irregularly bedded ss. Covered
for 2 at bottom of step. 5' above
this step are 15' of coarse
lumpy argillaceous ss.
(mudstone) with *T. carinatus*
& *H. alvata*. This looks like
the stuff in bottom of Hubbard
ravine.

2-3 - covered

3-4 - mudstone & calcareous
ss. At top of 4 is a shell
very much like *Vitulina*
cf. *Vitulina* and is
abundant. It ranges thru
2 feet of rock at least.
Other fossils with it
are *T. carinatus*, *C. coronatus*
P. munda. This horizon is at
about 1370-1400'.

4-5 - mostly same kind of
rock with *R. fimbriata*,
Aviculopecten, *Leopoldina*
Camarotoechia

$$\begin{array}{r} 225 \\ \times 83 \\ \hline 675 \\ 1800 \\ \hline 18750 \end{array}$$

5-6- mostly covered, platy ⁵⁹
argillaceous ss. 1275

6-7 covered; 7-8 argillaceous
platy ss. 'Saw no fossils

7-43- covered

43-44- mostly platy ss.

At top of step *I. carinatus*
is abundant, *Camarotoechia*
Also the *Nyassa*-like clam
which occurs near the
Centronella bed is present.

44-49 covered - 49-50 coarse

textured platy ss. 50-51-

same coarse textured platy

ss. 51-52- same - Saw

between 50 & 52 only *Mottville*

sp. & *G. eximius*. 52-53 same

53-54- same

54- covered.

225

Aug 13' - In the road bed paces
from the house are coarse
shaly ss. which break into

irregular slabs. *Vitulina* is
abundant at the base of the
exposure - fossils seen in this

10' of rock are: - *Trochus*,

Camarotoechia, *Petroccaria*,

Ichthyodus, *I. carinatus*,

H. alveata, *C. coronatus*

Proto-lepidodendron, *R. fimbriata*

D. dekaigi. This *Vitulina* zone

is just 225 paces from the

intersection or at

August 13²

1276

About 810 paces from where
two streams join, outcrops begin.
Gravel-leveelling therefore begins at
about 1300'

0-1- Basal bed is hard calcareous
ss abundant in *Canavotocchia*

4-6" thick rusted brown. At
the top of the interval are 3'
of shaly ss. with *Mottville* sp.

2-3 - covered

3-5 - shaly ss.

5-6 - 2' above top of 5 is a
bed of hard platy ss about 1'
thick. The lowest layer of this
ss. is very coarse for about
1-2". That above is platy -
fossils - *D. carinatus*, *Mottville*
sp., *Canavotocchia*, *D. erectum*.
About 6' above this layer is
a 4" bed in which *D.*
granulosus and *Mottville*
sp. are abundant.

6-7 chiefly hard ss. At top
of 7 is the bed with abundant
D. granulosus.

7-13 covered in stream-bed
but banks have platy ss.

~~12-13~~ At top of 13 comes a
falls. Lowest 3' are in heavy
bedded ss.

13-14 - Top of 14 were seen
D. dekayi, *Myassa*-like lam

G. erectum, *G. constans*
 14-15- Mostly platy ss with
 shale pebbles - some cross-
 bedded
Corn. flabellus Mottville Sp.
G. erectum
Nyassa - like clam c.

15-16 cross bedded platy ss.
 16-17 mostly platy ss. Top
 very coarse Mottville Sp.
 large *Doniochloa*, *Corn.*
flabellus, *G. erectum* c.
Ep. granulosa.

17-19 chiefly platy ss.

19-21 - same coarse ss.
 At top of 21 comes a ls.
 bedded, very sandy ls.
T. carinata a, Mottville
 Sp. *Cent. conella* rare.

21-23 - mostly platy ss.
 About 3' below 23 a ls. coarse
 ss. with *G. granulosa*. At
 top of 23 are *G. erectum*
M. coralliformis, *Corn. flabellus*.
 23-26 coarse hard ss. Top of
 26 is top of falls which extends
 from *Cent. conella* bed to
 top of 26.

26-27. Hard thin-bedded
 & ~~is~~ heavy-bedded some-
 what calcareous ss.
G. alveata, *G. nodosus* like
 Mottville Sp., *Ep. granulosa*

115
 1300
 145

23/2/7

Wahpeton - field.

Covered	5'
ss.	20'
Covered	80'
Green sh.	8'
Covered	50'
sh + ss	27'
Covered	7'
sh + ss.	3'
Green sh + ss	24'
	20'
sh + ss	10'
Covered	5'
sh + ss	30'
Green ss to shale	45'
Covered	10'
marginate covered cong.	3' 2' 5'
Covered	80'
ss sh	5'
Covered	38'
Cross-bedded ss	27'
Covered	31'
Covered	12'
sh + ss.	15'
	2'
Cross-bedded ss	30'
ss sh.	12'
Covered	10'
ang ss	8'
Covered	7'
ss + sh with fossil	15'
Covered	22'
ang. ss.	20' s. micaceous
Covered	143'

307
295
600'
290'
} *Bohannon*

Cross-bedded ss	40'
Cross-bedded ss	10'
Covered	16'
Dark green ss	4'
	1 1/4' } 1995' - 1000'
Reddish ss	37'
Red sh + ss	4'
Covered	17'
Red ss + sh.	25'
Covered	10'
red ss	18'
sh	3'
Covered	16'
ss + sh.	10'
Covered	7'
sh + ss	20'
	1/2" fossil.
Covered	9'
Covered	5'
Covered	4'
Covered	1'
Covered	2'
Cross ss	7'
ss	33'
sh - ss	15'

630

1785
1000
785
65
850

765
85
970
251
736
987
1099
2065
1987
737

1278

$$\begin{array}{r} 550 \\ 120 \\ \hline 11000 \\ 330 \end{array}$$

$$\begin{array}{r} 740 \\ 1450 \\ 740 \\ \hline 710 \\ 657 \end{array}$$

$$\begin{array}{r} 2 \overline{) 1367} \\ 684 \end{array}$$

790

$$\begin{array}{r} 120 \\ 4.5 \\ \hline 600 \\ 480 \\ \hline 540.0 \\ 857 \\ \hline 1397 \\ 740 \\ \hline 657 \end{array}$$

$$\begin{array}{r} 120 \\ 17 \\ 5.6 \\ \hline 720 \\ 600 \\ \hline 672 \\ 790 \\ \hline 1462 \\ 740 \\ \hline 722 \end{array}$$

$$\begin{array}{r} 114 \\ 24 \\ \hline 640 \\ 640 \\ \hline 264 \\ 1190 \\ 526 \\ \hline 664 \end{array}$$

Base of R. 7. - PP - 812

From Oth. - Base of R. 7. ^{at 1415'} - 340

< 85' 4"

< 55' above

Sp. divar - Oth. - 505'

Om - Sp. divar. - 280'

~~1945~~

1937

27-29 same - at top of 29⁶²
is a ledge about 8" thick of
exceedingly hard calcareous
ss.

1279

29-30 - covered

30-31 mostly bluish arenaceous
shale

31-34 - In the bank and in-
cluded in 31-34 are bluish
sh. with *G. cuneata* p.

34-37 Sp. fullers in bank

37-43 - same dark sandy sh.

43-44 - About 5' hard calcareous
ss which I believe is the
Portland Point. The exposure
is not good for collecting

clams *S. mucronatus*,
C. coronatus, *I. corinatus*,
Mytilarca, *A. decussata*.

C. bellistriata, *P. variegata*

P. emarginata, *A. spiniferoides*

Above this bed the rock is
soft arenaceous shale
with many fossils

The P.P. ledge is quite
rotted & breaks up like a
shaly ss, but when pieces
are broken it is a hard
sandy ls or limy sand

44-47 - mostly soft dark
arenaceous shale abounding
in fossils. There is no
question about this rock
being Moscow

C. Boothi, *O. undulatus*

95

495
41

522
1300

1822

1790
16

95
5

495
16

491
1300

1791

Sp. mucronatus

47-60 - covered

1280

63

60-68 - mostly rather soft
arenaceous shale abounding
in small clams.

68-72 - same

72 - end covered Road comes
at about 95th step.

I should use the 5' 2" step
here. On this basis contours
and hand-level work nearly exactly

There are about 120' between
the small-Centroneella bed and
the Portland Pt.

At A13³ - A reticularis was seen
in rocks about 30' below the
top of the hill along the road
(1810) or at about 1786'. The finding
of this *Atrypa* puts this in the
Spinifer-Atrypa zone and
means the top of the Hamilton
is 60 to 100' above it.

1281

64

Aug 14

The investigation of this stream was started at about the point where the 1340' contour crosses the stream a little down stream from the sharp bend behind the house. This gully showed absolutely nothing but some huge boulders black in color like Port Land Point about opposite the second house.

Aug 14

Wood Pond

Hand levelling begun immediately behind house at gully or at 1230' 0-10 covered, 10-11 about 5' of platy ss. with *Comarotoechia* 11-14 - same platy ss. with some very dark arenaceous shale ^{Mottville sp.} 14-15 covered. 15-16 - platy argillaceous ss. upper 3' upper bed of 4" very hard & calcareous abounds in *Comarotoechia* 16-19 - platy ss. - covered not examined. 19-20 covered 20-22 - 8' cascade in dark bluish grey sandy shale - Pal. *Copisticta*, *C. syntaxis*, Nyassa-like clam, *Mottville* sp., and *Comarotoechia*

22-24 - Shaler thin ss as
below for 22-23; 23-24 - about
2' about the base of 23-24 is a
ledge of ss., rather coarse
and suggesting the ledge seen
in Aug 113'. Above the ledge are
platy ss. 24-26 covered; 26-27
3' ledge of platy ss. at top.

27-28 covered; 28-29 - upper
2' covered. Both supposed to be platy
ss and at top of exposed rock with
a very calcareous base
with thin ss.

29-33 - covered.

33-35 - thin platy argillaceous
ss.

35-39 - covered; 39-40 2' of
fossiliferous argillaceous ss at
the top. Sp. nudosus, C. syntaxis.

39-45 mostly very dark argillaceous
shale.

45-46 about 1/2 way between 45 & 46
the ss., in rather heavy beds
abundant with *I. cingulatus* and
contains also small *Centronella*
in abundance. This puts the
Centronella bed at about 1466'.
I could not make out the
exact thickness of the bed.
But there were about 4" of
rock with *Centronella*. The
bed is chiefly calcareous ss
but there are thin arenaceous
shale layers and thin lentils.

12/20
2
45-
2/5
235
1236
1466

of shell braccia

1283

66

46-48 - covered.

48-51 - small falls, the upper
edge of which is formed of
about 3-4' of hard platy ss.
with curved cleavages
suggesting storm-solter.
The bulk of the falls is
in thin platy, argillaceous
ss. Fossils in the lower
argillaceous 12' are:

Gram. cuneata	Small Humula
Mottville sp.	Tentaculites
C. syntaxis	plants
M. pygmaea	S. granulosa
S. plicatoides	Nyassa-like
Coen. flabellus	D. erectum

in the upper ss. Crinoid is
very abundant. Nyassa-like plant
and D. erectum. It seems to me
this is definitely a facies fauna just
like the black sh. It is not needed to
make it look like this. By
the best of sp. recognizable.
Trinacrus is also present here.

51-52 - covered.

52-53 - platy ss. with Mottville
sp.

53-54 - covered in sandstone - red.

But 5' above this step are 8' of
blue arenaceous shales in
the bank.

54-62 - covered. Between 62 &
63 comes a quite high falls.

12/137
12

69
5
345
12
357
1230
158
1766
122



63-64 - The rock at 64 is 1284
dark arenaceous shale having
fossils.

T. cinnatus

Sp. fullonis

P. maxima

M. S. Sp.

Scn. cinnata

The 2' of rock below top of 63 is
a hard grey ss.

64-68 Top of falls in gray
shaly ss. much like the
shale of the Embury R.R.
cut. There are ~~5~~ 5 to
more of this shaly ss.
then comes the P.P. at just
about 69. This puts the base
of the Portland Point at 1517
and the distance above it
and the small Centronella zone
is 122'. A rough &
rapid estimate shows the
dip on the Portland Point to
be nearly 100' per mile.

The basal bed of the P.P. here
is not such a hard ss as
that on Hinson's Hollow.
Brook and all of the rock ⁷⁰⁴
breaks up pretty much like
a lumpy ss. The basal 2'
is certainly of harder rock
than that above as it
breaks up into very heavy
chunks of fossil *Vitulina*
& *Centronella* in these lowest beds.
Above the P.P. there is a very
high falls in the lower

$$\begin{array}{r} 12 \overline{) 198} \\ 16 \end{array}$$

$$\begin{array}{r} 99 \\ 5 \\ \hline 495 \\ 16 \\ \hline 511 \\ 1226 \\ \hline 1741 \end{array}$$

$$\begin{array}{r} 99 \\ 70 \\ \hline 29 \\ 140 \\ \hline 169 \end{array}$$

1285

Moscow. It is in the upper bed of the
Lithomurella on this and the
are a massive shale but
over at New Berlin they were
cross-bedded ss.

69-70 + 1/2' - The Portland Point -
in the upper bed of the Portland
Point seen - D. inaequalis
R. vanuxemi, E. lincolniensis, C.
granatensis, A. spiniferoides,
Sp. mucronatus,

Trilobites seen in the lower Moscow
R. lincolniensis P. radiata
Sp. mucronatus R. vanuxemi
E. lincolniensis
C. scutellus G. arcuata

Between 86 + 87 - C. granatensis is
abundant. Here limonite
bald spots are scattered throughout
the sandy sh.

R. lincolniensis
at 99 I could no longer sight
because it became so flat
Rock is exposed all the way to
99 and for 10' above it in a
low bluff. This makes about
150' continuous exposure of
Moscow

Strike of PP N69W 87' per mile - 89'

August 15.

1286

Handlevelling begun at road intersection 1224'. It is 13 steps to the stream below at the stream bridge crossing making this at 1291'.

0-13 - road to stream; 13-16 covered
16-17 - about 7' in bank of
heavy ss at base and a brown
fine blue shale above.

E. granulosa. *Massa*-like clam.
Mottville sp. *Chonetes* *cyrtalis*
Lin. upper Ludlowville

17-26 - covered. 26-27 - about 4'
of blue grey arenaceous shales
or shaly ss. containing
Mottville sp. *Spinifer*
S. granulosa. This is clearly
in the upper *Mottville*.

27-43 covered

43-60 bluish shales

43-45 were seen *Pal. constricta*
C. levitricatus, *E. granulosa*
T. variatus, *L. papposa*,
T. cingata, *Sp. b. line*
At 46: *E. levitricatus* &
C. constricta, *Sp. variata*
var. constricta

48-52 - same - at base
of 5-3 fossils are common
and here occurs what
appears to be the *Mottville*

This gully is on property
of Charles Strong

$$\begin{array}{r}
 53 \\
 \times 5 \\
 \hline
 265 \\
 \times 9 \\
 \hline
 2745 \\
 \times 2 \\
 \hline
 5490 \\
 \times 1 \\
 \hline
 5490
 \end{array}$$

$$\begin{array}{r}
 100 \\
 \times 10 \\
 \hline
 1000 \\
 \times 5 \\
 \hline
 5000
 \end{array}$$

3

$$\begin{array}{r}
 100 \\
 \times 10 \\
 \hline
 1000 \\
 \times 5 \\
 \hline
 5000 \\
 \times 2 \\
 \hline
 10000 \\
 \times 1 \\
 \hline
 10000
 \end{array}$$

$$\begin{array}{r}
 100 \\
 \times 10 \\
 \hline
 1000 \\
 \times 5 \\
 \hline
 5000 \\
 \times 2 \\
 \hline
 10000 \\
 \times 1 \\
 \hline
 10000
 \end{array}$$

specimen which has probably to
be set for Sp. fullus. The
two may be the same but
I think not. In this interval
were also seen

1287

T. carinata *C. coronatus*

E. lumbloeni

These are in the sands, may
be facies

54 At top of 54 fossils are
abundant:

R. canyensis

Sp. granulosa

C. spiriferoides

55 soft blue shale

Stromyria sp. *Camratic*

A. boethi

T. carinata

Cyprina were continuous up

to 60. This is all Moscow shale

The rock has varying degrees

of hardness according to the

amount of sand but should

be predominantly

shaly in appearance

60-78 covered

~~78~~ At 78 in bank is about 6'

of soft shale & no fossils

fossils

78-83 - Chiefly covered - some

heavy bedded ss. At 83 the

ravine forks, to the right

is a high fall

83-85 - at base of step

heavy irregularly bedded

argillaceous ss, higher

$$\begin{array}{r}
 99 \\
 \underline{3} \\
 495 \\
 \underline{495} \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{0} \\
 0
 \end{array}$$

$$\begin{array}{r}
 16 \\
 \underline{12} \overline{) 192} \\
 48 \\
 \underline{48} \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{0} \\
 0
 \end{array}$$

$$\begin{array}{r}
 495 \\
 \underline{495} \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{0} \\
 0 \\
 \underline{0} \\
 0
 \end{array}$$

the rock is probably
 further up the hill, contains
 limonite concretions. 7 corals
 seen between 24 + 35 are
T. carinatus *S. fulleri*
N. bilobatus
Pisana

89-90- softish to fissile sandy
 shales without fossils, sandy
 layers have fucoid markings
 like the Shaburne.

90-92- thin light grey, chiefly
 thin bedded ss. *Spirifer* -

92-94- sandy argillaceous ss
Spirifer -
A. sp. cf. A. sp.
T. carinatus

94-99 same

99-100 about 2' above the 99th
 step in hard irregularly
 fracturing light bluish

argillaceous, red mottled
 ss were found *V. pustulosa*,
T. carinatus, *S. fulleri*,
Spirifer - *Spirifer* - The
V. pustulosa are unlike those
 of the P.P. being small
 but are like those at the
 top of the Hamilton elsewhere.
 The *V. pustulosa* bed comes at
 about 1734'. Above the *V.*
pustulosa bed are more
 fossiliferous rocks.

198

198
 198
 198

1840
 198
 198

105-106 - Thin plat. ss. with fine fossils. At top of 105 is a layer of sp. *Pellid*, very abundant and in thin J clay balls are common.

107-108 - sh. and argillaceous sh. at 108 comes soft fine grained sand shale, micaceous blue in color. At the contact of these shales with the ss above they are much distorted.

17'

platy ss.
soft sandy sh.
8'±

platy
5'

sh
↓

108-109 - For about 2' of 109 the rock is the same shale of 108, then come about 2' of ss. which I believe belong to the rocks above. The upper 1 1/2' of 109 are in highly contorted, etc. var. called calcareous ss. This rock is highly fossiliferous. There are *Hypothyrid* or *Leiorhynchus* like *Spinifer* like *musculatus* *balli* etc. A small *Schuchertella* & a few clams. I think this is the base of the fully

109-112 - The rock of contorted bedding continues to 112.

112-113 rock is platy thin bedded ss. One slab out of place is filled with *S. pennatus* section end at about 114.

Between 113 & 114 rock had many *S. pennatus*, & a

1786
1283
1103

109
5
543
17
562
1220
1786

12/208
17

Fossils labelled 113-
114 should be
112- 113.
118

Canadian Leptæna. 1290⁷³
114-116 - covered
116-125 - platy 55 must be
Sherburne.

I think the top of the
Hamilton comes at the
bottom of Leptæna
(Hypothyrid) 11 1/2' below
109 or at 1786'. This would
make the thickness of the
Massena as 400'. The introduction
of rock of Sherburne type in
the Massena may explain the
thickening.

Aug. 15' Cumber Lake Outlet
Hand levelling begun at
intersection for 1226' - 0-8
covered. 8-9 blue argillaceous sh
of the Massena with Sp.
Immeronatus + I. carinatus.
9-21 mostly covered but shale
croppings along stream & in
bank. Between 21 & 22 outcrops
begin in stream-bed.
22-25 same. At base of
25 as a falls. 28- is top
of falls. 28-30 - at 30 exposure
end in stream. Here comes a
road

30-63 - covered

63-72 Exposures are now
pretty continuous but very
poor, being all overgrown with

$$\begin{array}{r}
 350 \\
 12 \\
 \hline
 362 \\
 1226 \\
 \hline
 1588
 \end{array}$$

$$\begin{array}{r}
 559 \\
 1859 \\
 \hline
 388 \\
 111
 \end{array}$$

$$\begin{array}{r}
 494 \\
 2 \\
 \hline
 988 \\
 205 \\
 \hline
 31125 \\
 408
 \end{array}$$

158

$$\begin{array}{r}
 38 \\
 5 \\
 \hline
 390 \\
 15 \\
 \hline
 405 \\
 1226 \\
 \hline
 1631
 \end{array}$$

74
moss and covered with water
72-73 covered. At 65 **1291**
sandy rock was seen *S. p.*
~~filled in the same~~ scathed
through the rocks. This
maybe near the Vitulina zone
75-76 covered
76-78 Bluish sandy rocks with
S. tullius
78-79 covered. The top of the
Hamilton must be near
78.

Section along road started
going down at crossing of road
with stream at 300 paces off
→ appear thin ss and
argillaceous layers ss with
S. mucronatus and *S. carinatus*.
These exposures would be
about 4700' and are probably in
the Shinarump. Rock bed at 409
at 465 is a storm roller layer
which extends to 474. This had
impressions of a *Trembychus*-
like shell and probably marks
the Tully. This would be about
1640 ±. At 565 is a small
outcrop containing *S. carinatus*
and *S. tullius* 565 - 789
covered. 789 - 969 - exposures
of dark sandy irregularly fracture shale
S. carinatus, *S. tullius*
S. crocatus *S. scitulus*
S. mucronatus.

1292

75

At 969 is a bed with many small
black concretions & fossils. Here
are *S. granulosa*, *A. reticularis*,
S. microneura, *A. spiniferoides*.
Mod. concentrica. This appears
to be part of the *Spirifer*
Atropa zone. ~~473~~ 969-1181
expressive in arenaceous shales
nearly all the way. *T. carinatus*,
S. microneura, *M. californicus*,
S. arcuata. 1181-1231 covered
1231-1267.

Dark shales with

S. granulosa, *C. coronatus*,
A. spiniferoides, *S. microneura*,
T. carinatus

1267-1407 covered

1407-1457 Moscow shales
abounding in fossils, *T. carinatus*,
C. coronatus (very good), *M.*
mytiloides, *M. ville* sp.,
A. umbonata, *S. fullius*,
Petrocrania.

1732 Place to road intersection at
1226.

23

87

August 16

1293

76

At an elevation of about 2000' were seen sandstones and thin argillaceous ss. containing an abundance *S. tullius*, *T. carinatus*, *Sp. mucronatus* (with rib in sinus) a large *Grammysia* like *G. nodocostata*, *Cyrtina* and *Leiopteria*. *Stroph. rollers* occurred near top of exposure and were full of *T. carinatus*. I believe all of this exposure to be very close to the top of the Hamilton.

Aug 16' - Gully 5 of Schenecos

In this gully land levelling was begun at the first bed rock exposures in the gully.

07-17 - mostly blue grey rather dark sandy shales and occasional sandstone beds.

17-18 - Half way between 17 & 18 *U. tulina* is abundant in the argillaceous ss. It is accompanied by *S. tullius*.

18-21. It has become harder and is mostly a sandstone, rather coarse. At top of so large *S. tullius* are common in the rock.

21-23 - The top of this step is just under the bridge of the wood-road. In the

310
90
220

1536

12
130
87
47

26

134

mm/50/10
2

interval were seen - *Leucostoma*
 Now base *Leucostoma*, *S. fullius*. At top of
 of *Fullius* → 23 is storm roller layer.

23-25 covered.

25-26 - at base of 26 is a
 heavy storm roller layer and
 in it were found *graptolites*
Stellaria & *graptolites*. Above it
 are thin-bedded sandstones.

26-27 - mostly plate ss.

containing *Leucostoma*
 which I found in all parts
 of the interval. This is
 undoubtedly a part of
 the *Vatukia* zone which
 causes *Leucostoma* further
 west.

27-28 - coarse bedded ripple marked
 ss. some *graptolites* but of last
 remains.

28-29 covered.

29-30 nearly the whole steps
 and probably that below is
 made up of irregular
 masses of *leucostoma*, plainly
 of storm-roller origin.
 The exposure looks as if
 someone had taken a lot
 rounded blocks & thrown
 them together. Some show
 well the onion-skin layers.
Fossils - *Leucostoma*. These
 storm rollers are exactly
 like those at Hamilton.

184

Bridge & Co

$$\begin{array}{r} 72 \\ 5 \\ \hline 360 \\ 12 \\ \hline 372 \end{array}$$

$$\begin{array}{r} 63 \\ 5 \\ \hline 315 \end{array}$$

$$\begin{array}{r} 59 \\ 5 \\ \hline 295 \\ 12 \\ \hline 1566 \end{array}$$

$$\begin{array}{r} 58 \\ 32 \\ \hline 36 \end{array}$$

57

$$\begin{array}{r} 1448 \\ 56 \\ \hline 1390 \end{array}$$

$$\begin{array}{r} 15 \\ 29 \\ \hline 44 \\ 5 \\ \hline 229 \end{array}$$

$$\begin{array}{r} 1475 \\ 222 \\ \hline 1440 \end{array}$$

1295

Saw no *Leontophyllum* but I believe this is because the lower beds of the storm layer are not exposed.

30-31- slightly faulting not bearing fossils

31-63- *Shuburne unfoosilifera* at 63 and above comes fossiliferous rocks, between 62 & 63.

Actinopteria is abundant at 73. Above the bridge from 67 to 73 the Ithaca is mostly covered. Bridge & road cross about 1675'.

This would put top of Hamilton below *Chonetes* layer at 1448' and the *Vitulina* zone would come at about 1390'.

The lower limit of the Ithaca is exposed at about 250 paces down the road from stream & road crossing.

Hand leveling from top of T. g. to base of the storm layer led at the top of the Hamilton *Chonetes* 579 steps. The R.R. is at 1271, so this puts the top of the Hamilton at 1566 and the *Vitulina* zone at 1510'.

This is all wrong here

46
5
230
157

Handlevelling begun at 1210'

1296

Aug 16th Property of W. H. Wood

0-31 covered

31-32 - 5' coarse argillaceous
bluish in color. - Hamilton

32-36 covered

Between middle of 37 and
middle of 38 are platy ss.
The rock here abundant in
S. tellus.

38-43 covered top of 44 hard
ss.

44-45 sandy sh. with *Sp.*

micromatus & *Leiodontina*

54 - covered *H. cuboides* between
18 & 19 steps above ~~H.~~ *H. cuboides*
was seen *S. micromatus*

At 46 steps above the
Hypothyris the first true
Althra was seen. The
contact with the Sherburne
must come between 42 &
46. In the Althra here at
46 were seen *P. lirata*,

T. carinata, *Sp. micromatus* like
micromatus, *Leiodontina*. This
fauna is like that seen with
H. venusta

At 54 the rock is a rather
soft ss. with a little shale
and here occur *P. lirata*
and *Sp. micromatus*,
with small clams. Above

517
1210
1727

52

53
6
58

92

17

1484
1370
119

119

117
1484
236

Hand-dwelling began about 12/10

Strike & dip on Vitulina zone N 73° W 107° per mile

Vitulina zone at 1370'
" " 1489'
Hypothyris " 1527'
~~Strophomena~~

1297

8

this the rock is a hard
calcareous one, when fresh
this section of the rock
in some abundance. There
is here a shell that suggests
Leptocyclus

After finding the *Strophomena*
fossils at 1489' above the road
I walked back but in
sp. could find no fossils
below it. The typical *Strophomena*
Strophomena and in

the 20' of rock exposed
below 20' *Strophomena* of the
fossils. It is nearly all as
Between 9+10 steps below
Hypothyris the rocks had
Leptocyclus & *Strophomena*
Strophomena occurred about in
10-11 Below Hyp. 15-16 Below
Hyp. corvus with many
Strophomena. Between 21+22
below Hyp. were found
Strophomena, sp. *Strophomena*
Strophomena and a single
specimen of *Vitulina* at the
bottom of the step. This is
the bottom of 31 when
coming up the gully.

This gully is 1.75 miles S of
the road to Cumbern Lake

Aug 16th revisited

As we up road (wagon road) put
strainer road at about 1540 on
the crest and the Uctulera zone
is 28' below this wagon road.
Crossing to the other side the bed
is 31' above it.

Between 10 & 11, above the
base of the ~~St. Lawrence~~ red
were found Ephyrae like
Solenoides & Tentaculites.

About 11' below top of 12
comes a layer of clay containing
in which sp. Follies is abundant.
Above this layer of s. Follies
about 2', or 1' above top of 12
comes a siliceous ss. having
a highly fractured & containing
Hypothyrids + Corularia. The
specimens are poor.

The handclimbing to the Hypothyris bed was begun 20 steps below the base of the storm-roller bed. I then put the Hypothyris bed 10 steps or 52' above the base of the storm-roller bed.

Levithygnathus bed at
27.

about 4

1522

the Vitulina bed at about 1522

1299

Aug 17 - Chasoville

Hand-leveling begun at 1290 -
0-10 mostly covered but some of
the Mayan shale exposed on
the bank.

10-11 - about 2' above base of this
interval occurs Vitulina. This
would be at 1343'

11-14 covered

14-15 low (4') coarse in gray
ss.

15-16 covered

16-17 platy ss with T. carinata

17-24 mostly covered but some
exposed in flat top. Top of
24 T. carinata, S. tullius.

24-25 covered

25-39 - Hypothyris bed which
is at 1491' - ~~15~~

Hypothyris bed -
calcareous? Gray ss.
containing minute concretions.
There were also S. tullius &
T. carinata along with the
Hypothyris.

20' below Hypothyris is
a layer containing
S. humerosa in great
abundance and also
C. coronatus (very large)
The Hypothyris layer is
about 4" thick.

14
1343

1344
48

1342

39
56

1290
1291

0

4

1290

1343

39

5

1295

201

1290

1491

1490
1491

1300

83

Aug 17th about ~~10~~ 9' above road-
level *Brachyelas* was found.
Along roadside loose many
Hypothyridina were found
but I could not get them
in place. They may be from
the loose material above the
road-cut. Finally found the
Hypothyridina 10' above the
highway. This locality is 125
paces N of F. S. Cradall
home and 1.55 miles from
the intersection with highway
(Coopers town junction).

Aug 17th near dam (about
1000 ft. N of village)
S. macrocarpa - *S. marginata*
A. bradyi - *A. th. Chabotes*
H. cuboides
About half-way between
dam and end of section
H. venustula is abundant in
a bed about 1 1/2' above a 3' bed
of very heavy bedded ss. The
Hypothyridina range for 1' - 15'
at the dam the outcrop is
partly covered and the heavy
ss. bed is about 7' above
the road, the *Hypothyridina* bed
is mostly covered. At 241
paces N of the dam the
heavy ss. bed is nearly at
road level. At 242 paces

28.0

26.85

1.55

30.25

29.45

.80

the Hypothyris bed is at 1301⁸⁴
road-level, just beneath
Hypothyris. Primary clay was
seen 294 paces N of the dam
the exp. ends. The *P. boydi*
& *S. mucronatus* occur all
about 5' above Hypothyris.
The rock with Hypothyris is
an argillaceous ss of coarse
fracture, micaceous, coarse
much like upper Delphi.

13' Hyp
3' heavy beds ss
arg. ss. 5'

Aug 18 - Rain all day

Get. Mr. W. A. Miller
Westville, N.Y.

1 Richfield Springs
1 Cooperstown sheets.

August 19

1302

25

Goodyear Lake

Fully at Colliers dam

The section represented here was made a short distance N. of the buildings of the power plant beginning at the exposure at road level near the culvert on the West side of the road, which is marked off by two white posts. This culvert is across N. of the cement building of the Associated Gas & Electric Companies, N.Y. St. East Electric Corp. Sub. Station 370-1 - rock a heavy argillaceous ss. breaking into thick plates & lumps. About 1' above the lowest exposed rock *Hypothyris* is abundant and this is the lowest exposed zone. The only fossil seen with it was *A. boydi*. In the same kind of rock at 2' ~~above~~ below the top of this interval *Hypo.* again occurs 1-2. Comes a 2' layer about of heavy-bedded ss. Then a bed of thin-bedded argillaceous ss. with *A. boydi*, then a 2' storm-rolled layer. 2-3 - at base of this interval. are 1' more of the storm-rolled bed - then 2' of ~~the same~~ ~~argillaceous~~ mudstone or sandstone

ss + sh
C. aurora

3' ss.

4' arg ss.

2' Hyp.

003'

5' Hyp.

Road level

Here *Hypothyris* is abundant & *P. caurora* & *O. longicauda* were also seen. The upper 2 1/2' of this interval are covered but here should come the heavy ss. ~~above~~ above which *Hypothyris* is again present. These exposures are probably 50 paces south of the dam.

3-4 - Upper 2' are covered.

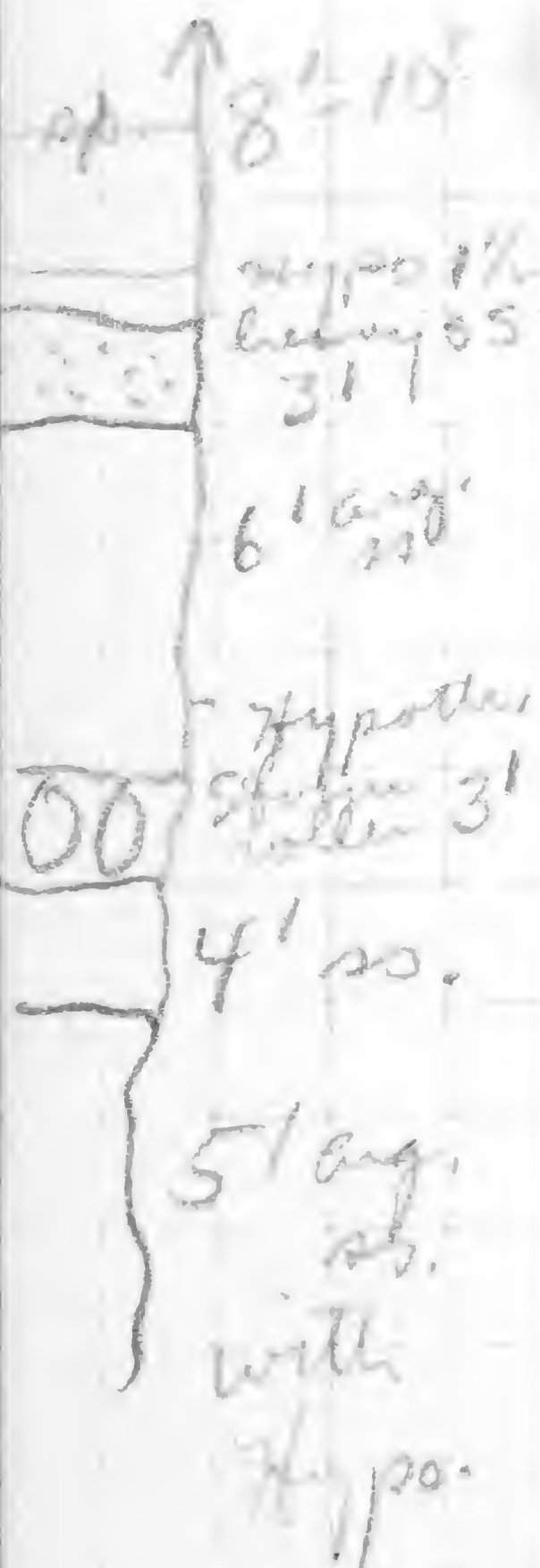
Upper 3' are in platy ss and coarse argillaceous ss. Plant fragments were the only fossils seen.

4-5 - This is composed of argillaceous ss + platy or heavy bedded ss. fossils are abundant in the lower 3'.

Sp. like *micronotus*
C. aurora

The storm roller zone of 1-2 is exposed about at road level ~~at~~ a little distance N of the dam.

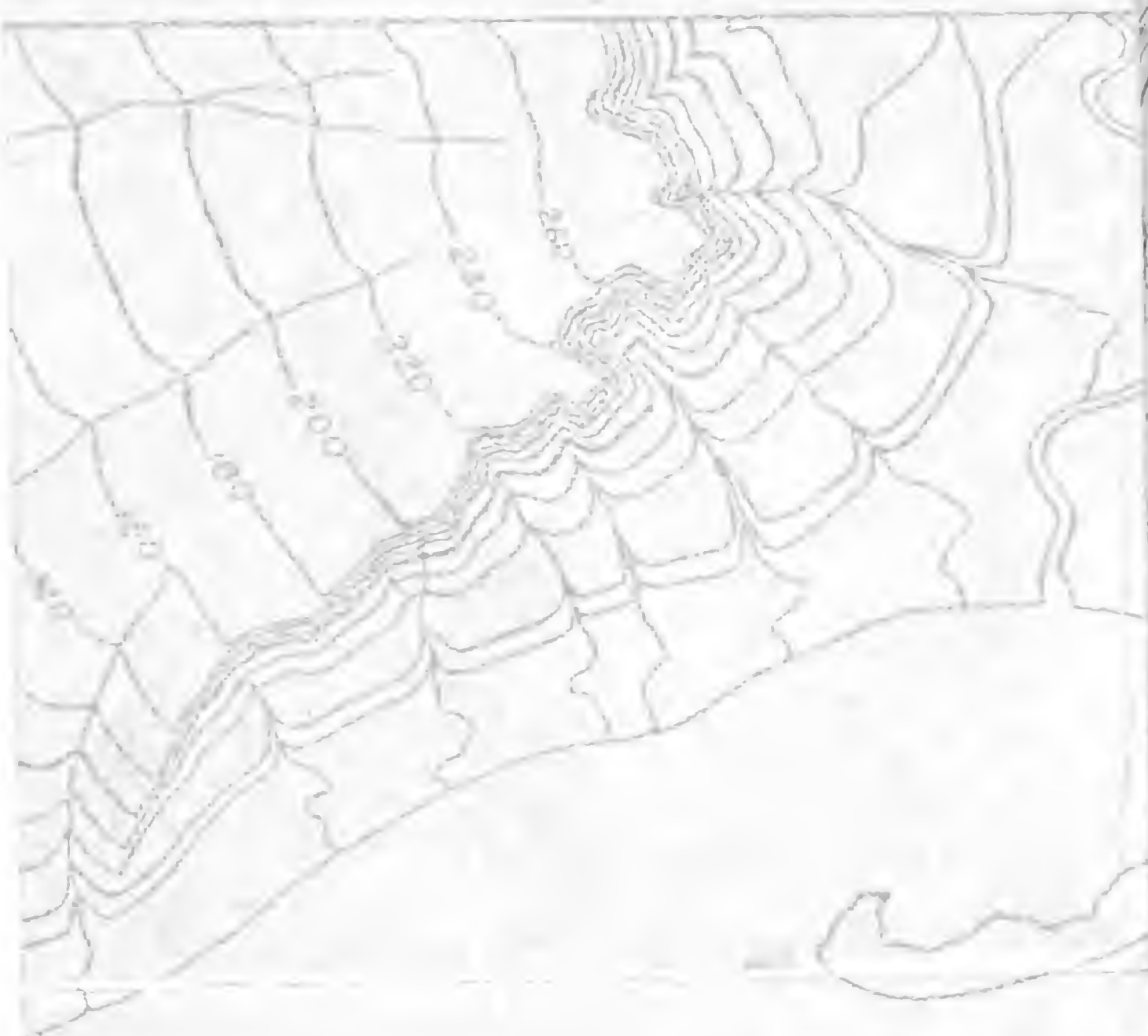
and here *Hypo* can be seen. Between this storm-roller zone and the heavy bed of ss. above which comes the *Hypo*. & *aurora* first are just 6' of thin-bedded argillaceous ss. + platy ss. mostly the latter - fossils uncommon in upper beds.



thin bedded ss.
heavy bedded ss.

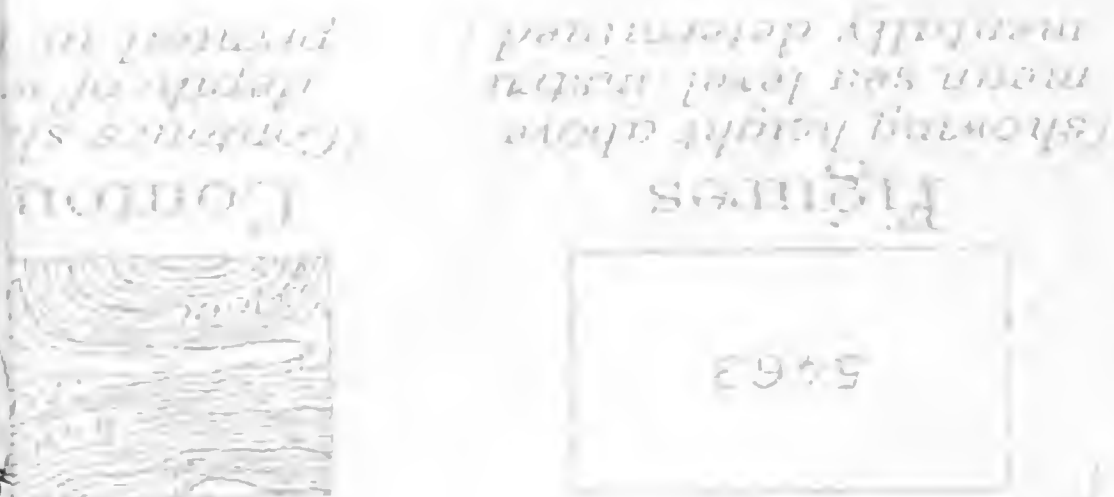
contour lines show the shapes of valleys, as well as their altitudes. Points far apart on the map indicate a gentle slope, while points close together indicate a steep slope. A single line indicates a cliff.

The manner in which contour lines are drawn to show the grade is shown in the figure below.



The sketch represents a river valley. In the foreground is the sea, closed by a hooked sand bar. The river flows into a terrace into which small streams flow. The hill on the right has a rounded top and several spurs separated by ravines. The lower end of the hill is a sea cliff. The

1304a



95
12/4/75
4a

Special maps.



... show the shapes
as well as their altitudes.
... apart on the map indicate
... together indicate a steep slope
... indicate a cliff.
... manner in which contour
... is shown in the figure b



... sketch represents a river v
... In the foreground is the s
... by a hooked sand bar. C
... into which small stream
... on the right has a rounde
... rs separated by ravines.
... er ends by a sea cliff. Th
... at the valley in a steep

95
3
12/4/5
40

CONVENTIONAL

CULTURAL
(printed in black)

City or village	Roads and buildings	Ruins	Cliff dwelling	Metalled road (distinguished on recent maps only)	Private or poor road	Trail or path	Railroads and stations	Electric railroad
Dam	Dam with lock	Canal lock	U.S. township and section lines and located corners	State line	County line	Civil township or district line	Rivers	Ponds
Bench mark (symbolic bench mark shown brown cross and lettering; cross without lettering)	Cemeteries	Church, School	Coke ovens (distinguished on recent maps)	Tanks and oil reservoirs	Oil wells	Mine or quarry	Marsh	Swamp

RELIEF (printed in brown)

Figures showing height above mean sea level, printed in brown	Contours showing depth of water, printed in blue	Depression contours	Levee	Wash	Cliffs	Mine dumps	Tailings or mining debris	Sand and silt dunes	Intermittent lake

WOOD
(when shown, printed in brown)

1304a



valley that lies between two
 sea, with a bay that is partly
 On each side of the valley is
 as have cut narrow gullies.
 ed summit and gently slope.
 The spurs are truncated at
 the hill at the left terminates
 scarp, from which it slopes

the United States 30' in latitude and longitude
 similar to that of sparsely inhabited regions
 published at a scale of $\frac{1}{100,000}$, or about 4 miles to an

The topographic maps on latitude and longitude.
 mineral maps on scales larger than $\frac{1}{62,500}$
 maps show topographic survey of Alaska
 tive text 8, and nearly 35 per cent of
 States. About 10 per cent of the Territory

Index distance maps on a scale of
 geologic folio. Most of the remaining
 vey may be mapped on a scale of $\frac{1}{250,000}$
 may be obtained mapped on a scale of
 either of the large part of the Hawaiian
 The geologic maps are published
 depending on the features shown on these
 folios will be—(1) water, including sea

Application of other bodies of water; (2)
 cash, drafts, valleys, and other features
 addressed to the needs of man, such as towns
 boundaries. The conventional
 features are shown and explained
 the earlier maps, and additional
 November special maps.

AL SIGNS

RE
 (ack)

1000

1005

1000

TUR



$$\begin{array}{r}
 485 \\
 4830 \\
 \hline
 36 \overline{) 14550} \\
 \underline{144} \\
 15
 \end{array}$$

$$\begin{array}{r}
 52 \\
 525 \\
 \hline
 270 \\
 1610 \\
 \hline
 1905
 \end{array}$$

Summit

Moscow - 445'
 PP - Sols - 1090'
 Sols - Moon - 750
2285

2000-2100

$$\begin{array}{r} 133 \\ 665 \\ 931 \\ \hline 1097 \end{array}$$

$$\begin{array}{r} 133 \\ 59 \\ \hline 1197 \\ 665 \\ \hline 1097 \end{array}$$

900-1000

$$\begin{array}{r} 1303 \\ 426 \\ \hline 877 \end{array}$$

$$\begin{array}{r} 1091 \\ 519 \\ \hline 572 \end{array}$$

$$\begin{array}{r} 765 \\ 412 \\ \hline 353 \end{array}$$

$$\begin{array}{r} 13.3 \quad 13.3 \\ 33.5 \quad 82 \\ \hline 665 \quad 266 \\ 399 \quad 1064 \\ \hline 399 \quad 1064 \\ 445.55 \quad 1090 \end{array}$$

$$\begin{array}{r} 13.3 \\ 56.5 \\ \hline 665 \\ 798 \\ \hline 665 \\ 751.45 \end{array} \quad 13.3 \quad 3.9$$

Schoharie

Mos. — 519
 Panther Mtn — 1310
 Ovs-Moon — 630
2459

$$\begin{array}{r} 133 \quad 3.1 \\ 19 \\ \hline 1197 \\ 133 \\ \hline 252 \end{array}$$

$$\begin{array}{r} 830 \\ 445 \\ \hline 385 \end{array}$$

$$\begin{array}{r} 133 \\ 31 \\ \hline 399 \end{array}$$

700-1000
 1100 1100

$$\begin{array}{r} 13.3 \\ 39 \\ \hline 1197 \\ 399 \\ \hline 518.7 \end{array}$$

$$\begin{array}{r} 13.3 \\ 785 \\ \hline 665 \\ 1064 \\ \hline 1197 \\ 1310.05 \end{array}$$

$$\begin{array}{r} 133 \\ 19 \\ \hline 1197 \\ 133 \\ \hline 253 \end{array}$$

$$\begin{array}{r} 133 \\ 116 \\ \hline 798 \\ 133 \\ \hline 2128 \end{array}$$

$$\begin{array}{r} 133 \\ 555 \\ \hline 399 \\ 4123 \end{array}$$

$$\begin{array}{r} 133 \quad 1064 \\ 31197 \\ 57513034 \\ 665 \\ 931 \\ \hline 665 \\ 764.75 \end{array}$$

$$\begin{array}{r} 133 \\ 82 \\ \hline 1064 \\ 1090634 \\ 532 \\ 597 \\ \hline 1512 \end{array}$$

$$\begin{array}{r} 13.3 \\ 47 \\ \hline 931 \\ 552 \\ \hline 6451 \end{array}$$

$$\begin{array}{r} 133 \\ 183 \\ \hline 665 \\ 1064 \\ 133 \\ \hline 246.05 \end{array}$$

$$\begin{array}{r} 133 \\ 1197 \\ 665 \\ \hline 784.7 \end{array}$$

$$\begin{array}{r} 133 \\ 3.2 \\ \hline 266 \\ 399 \\ \hline 46.55 \\ 425.6 \end{array}$$

$$\begin{array}{r} 13.3 \quad 13.3 \\ 45 \quad 82 \\ \hline 798 \quad 1064 \\ 518 \quad 778 \\ \hline 618 \quad 9 \end{array}$$

$$\begin{array}{r} 2000 \\ 785 \\ \hline 1415 \end{array}$$

$$\begin{array}{r} 8.5 \\ 13.2 \\ \hline 855 \\ 166 \\ \hline 1134.15 \end{array}$$

1.7

405-409

776

12

Centronella zone

710

630

$$\frac{96}{630}$$
$$\begin{array}{r} 2 \\ 830 \\ \cdot 75 \\ \hline 4150 \\ 5810 \\ \hline 62.250 \end{array}$$

1736/1737

$$\begin{array}{r} 607 \\ \times 2 \\ \hline 1214 \\ \times 138 \\ \hline 1758 \\ 12140 \\ \hline 83866 \end{array}$$

1954

$$\begin{array}{r} 13.3 \\ 2.7 \\ \hline 1197 \\ 266 \\ \hline 38570 \\ 38570 \\ \hline 60 \\ 840 \\ \hline 9000 \end{array}$$

420
120
710
713
7163
712
880

$$\begin{array}{r} 1197 \\ 133 \\ \hline 2527 \\ 530 \\ \hline 6827 \end{array}$$
$$\begin{array}{r} 133 \\ 38 \\ \hline 1064 \\ 399 \\ \hline 1390 \\ 2505084 \\ \hline 380 \end{array}$$
$$\begin{array}{r} 102 \\ 102 \overline{) 102} \\ \underline{102} \\ 0 \end{array}$$

$$\begin{array}{r} 109 \\ \times 54 \\ \hline 436 \\ 5450 \\ \hline 5886 \end{array}$$

$$\begin{array}{r} 7 \frac{1}{2} \\ \times 10 \\ \hline 75 \end{array}$$
~~2.70~~
$$\begin{array}{r} 1340 \\ 243 \\ \hline 1067 \end{array}$$
$$\begin{array}{r} 2.7 \\ 90 \\ \hline 2430 \end{array}$$
$$\begin{array}{r} 1370 \\ 1021 \\ \hline 349 \end{array}$$
$$\begin{array}{r} 256 \\ 78 \\ \hline 1280 \\ 1792 \\ \hline 15200 \end{array}$$

1450 1370
1450 1417
303

1892

[illegible]

170-175

on

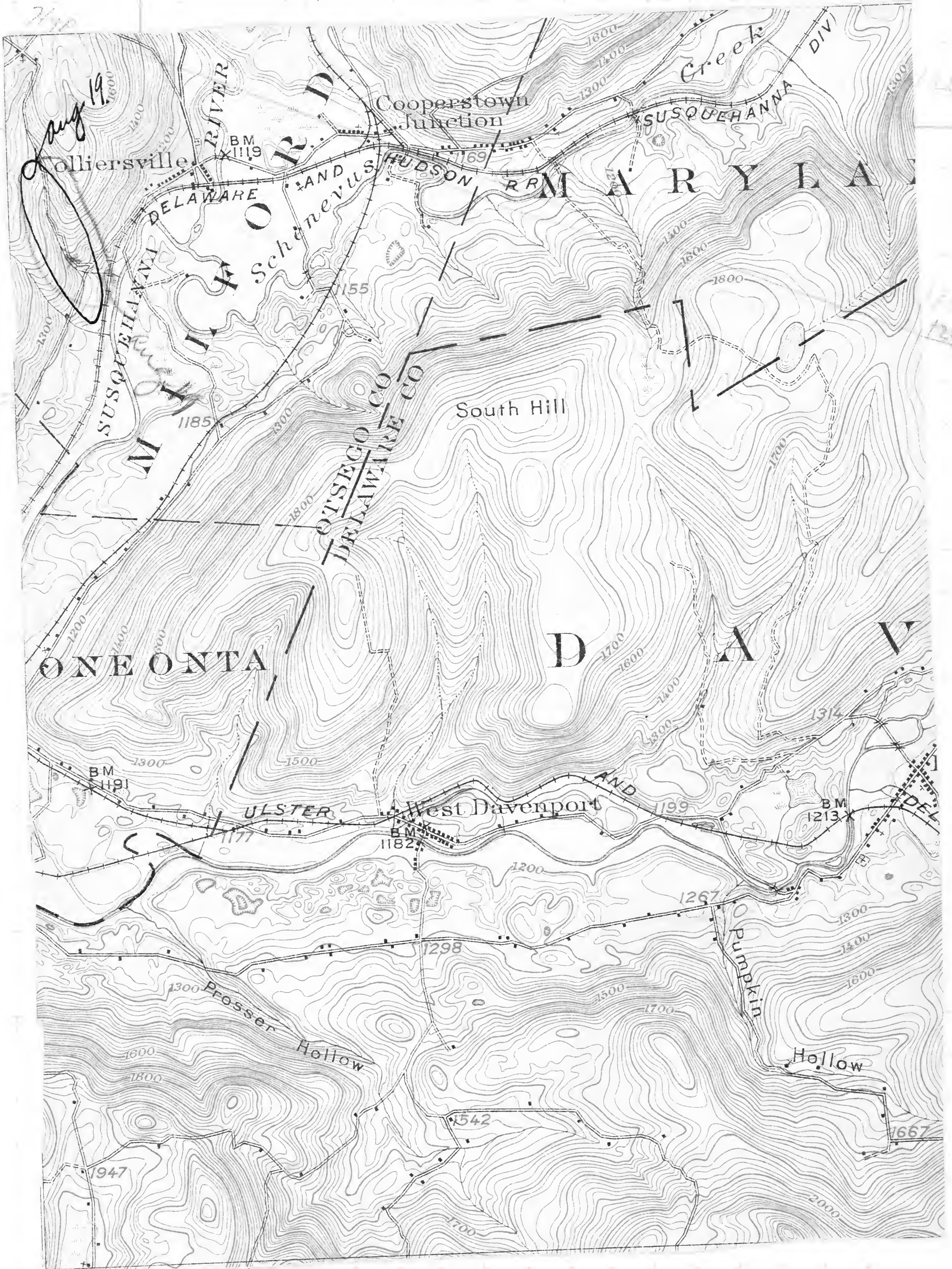
23

$$\begin{array}{r} 15 \overline{) 43} \quad (287 \\ \underline{30} \\ 130 \\ \underline{120} \\ 100 \end{array}$$

806 21.5
075. 19.4
13.5

$$\begin{array}{r} 48 \\ 34 \\ \hline \end{array}$$

1306



1827
25) 357 (143)
107
102

Just beneath the upper heavy ss. of 3' fossils occur
Hypsa. A. bolydi, small
Rhipidomella, Strophomenoid,
Tentaculites. The uppermost
Hypothyris bed is the first
to show an abundance of
Spirifer.

1304

S. mesa

In the upper Hypothyris zone were
seen Spirifer mucronatus?,
S. granulosus?, Conularia,
Actinopteria, Paracyclas s.
Pal. emarginata.

Aug 19

Collierville

H.L. began at 1180

0-1 thin bedded ss.
1-2 - same Leptopteria
2-6 - same; between 6 & 7 Leptopteria
was fairly common
6-14 - same; at 14-15 came
thin platy ss. with a large
Spirifer & Actinopteria
at 17 was a large Spirifer &
Leptopteria. This is the
clithra fauna without doubt
and it came in at about 1250'

1210
1108
102

Aug 19'

Outcrop of Moscow 2.4 miles
south of Milford on west
side of River;

The rock is mostly blue shaly ss. 87

1308

<i>A. spinifera</i> a	<i>S. granulosa</i>
<i>E. lincklaeni</i>	<i>M. concentrica</i>
<i>C. indenta</i>	<i>P. fecunda</i>
<i>T. carinatus</i>	<i>G. capillaria</i>
<i>Pal. constata</i>	<i>Cymatocella</i> small
<i>C. coronatus</i>	<i>Sp. mucronatus</i>
<i>A. reticularis</i>	(with rib in sulcus)
<i>S. circularis?</i>	<i>A. umbonata</i>
<i>O. undulata</i>	<i>C. bellistata</i>

Aug 19² - Vitulina zone at 1370-1380'. This makes the ~~Atropa~~ ^{atropa} zone about 190' below the Vitulina zone

August 20

Road to Fly Creek - At top of hill is an exposure of about 30' on the south bank. Here are exposed about 5' of bluish grey very hard sandstone crowded with *Camerothechia* Lingulid, and in places the rock is a shell-brick. Above this are more shaly ss for about 15' and the upper rock is of somewhat blocky sandy shale. In the lower part of ss. occurs *L. macrodonatus*. The top of the hill is capped by about 1' of platy sandstone abundantly in *Sp. microratus*, *T. carinatus*, *P. emarginata*, *Camerothechia*.

The softish crumbly sh contains *D. undulata*, *Sp. microratus*, *P. lirata*, *T. carinatus*, *B. sulcomarginata*?

Section up hill

Handlevelling begins at about 1560'

0-1 - soft arenaceous shale containing *Levigata* - shale weathers purple

1-3 - covered

3-4 - This interval (is in coarse sandstone, like the upper Delphi at Hamilton) which fractures with an irregular surface.



Large *Camarotoecia flabellum* occurs here. The very top of the interval is calcareous ss.

4-5 - This interval is in shaly ss. or lumpy sandstone, fossils are common: *Camarotoecia* a. The rock is a granular bluish gray. The top of the interval for about 2' is hard calcareous ss. abounding in *Camarotoecia* 71. *arguta* is common here.

5-6 - rather soft, platy shale capped by an 8" bed of hard ss. in the shale 6" below the ss. occur *Camarotoecia*, *Productella* *astrucoides*, *Cory. flabellum*, *Sp. micronatus*, *Mottville Sp.* This shale is rather brittle and friable.

6-8 - dark, platy, sandy shale.

8-9 - This step is a transition of ss capped by heavy-bedded ss.

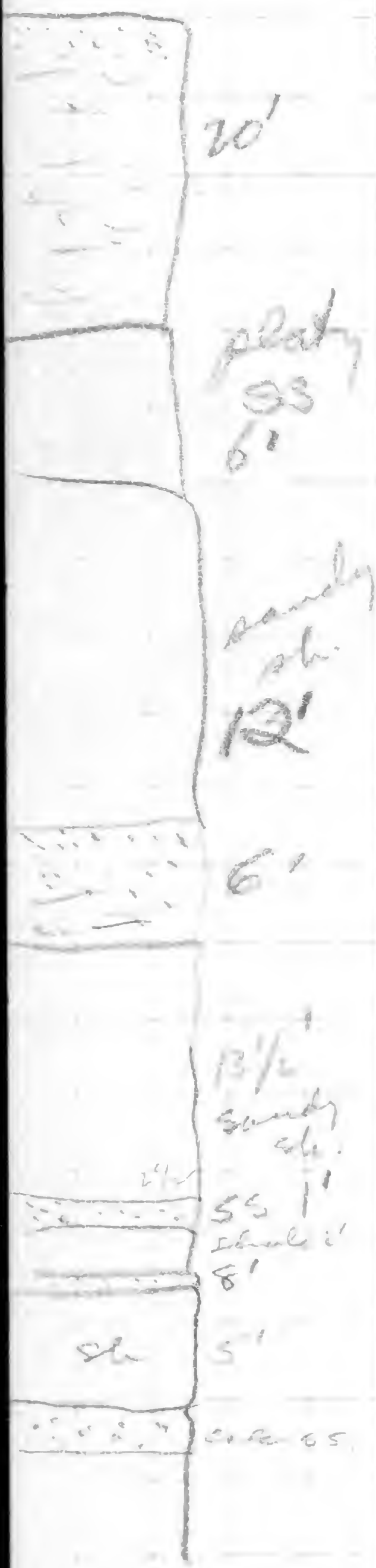
9-10 - chiefly heavy-bedded ss. and some shell breccia.

Leptæna, *Sp. micronatus* a

The ss. at the top of 9 abounds in small

Camarotoecia

10-12 - sandy shale - very hard to see fossils in this shale as it is mostly covered. Plates of large size of this rock are marked by large breccias, so-called.



12-13- 6' of platy ss. abounding
in fossils *Tetopteria*. The upper
part is really dark shale.

Camarotoecia

Mottville sp.

C. coronatus

Above this step are about 20'
of sandy shale culminating
in the hard ss. near the top
of the hill.

After working this section
somewhat quickly, I find
nothing ~~in~~ in it that I can
recognize as diagnostic. The
presence of *Negassus* and
Homocidites indicate it to be
Shanesteeles in age.

A 20' - Crumbly shale like the
Bridgewater, N. Y. *Trigaster*. This
is very probably lower Peckaport
67' above this in the field to the
west are coarse argillaceous ss.
having abundance of *crinoid*
stems and *sp. mucronatus*.
37' above this ledge is an
extensive ledge which must
run for more than 0.1 mile.
Here were seen:

Sp. acuminatus *P. lenticula*

B. alveata

Common stems

Mottville

The lower ledge showed about
8' of rock; the upper 10-15'

Aug 20th -

1312

1150

Hand drilling begun about #70'

0-16 - covered.

1263' 17-18 - soft argillaceous ss
Atypa zone bounding in fossils*P. lirata**Ambocoelia**S. mucronatus**Strophodont**A. reticularis**Hypothyridina**A. spinosa**A. boydi*

These rocks are clearly
in the Tully horizon but above
the abundant *Hypothyris*
Hyp. was found in the upper
most layer at 18.

18-21 covered

21-22 up in 21 comes same
kind of *Spinifers* as below &
abundance of small *Chonetes*.

Top 2' of cross-bedded ss.

22-23 - Thin bedded ss with
S. mucronatus.

23-25 - cross bedded & rippled ss.

25-32 - Cross-bedded & rippled
ss. At 32 come a thin layer
of crinoidal ss, at 34 come
dark sandy sh.

34-60 - same dark shale &
thin ss.

Between 63 & 64 the lithology
changes to a heavy ss with
big *Spinifers*. at 65 was found

Pal. emarginata
Hypothyris

40 200

$$\begin{array}{r} 64 \\ \hline 118 \\ 16 \\ 320 \\ \hline 331 \\ 1170 \\ \hline 1501 \end{array}$$

93

a layer abounding in **1313**
Tropidoleptus. This *Cl. thaca*
must have appeared at
about 63-64. This would
put the *Cl. thaca* at about
1500' and make the
Sherburne (from top of 23-63)
about 200' thick

Aug 20³ - Handlevelling begun
at 1180' - Houghtalings
8-6 covered = 0-4 covered

4-12 6-16 - arenaceous and shaly
ss. At ~~the~~ base of 16-17
comes a layer of calcareous
ss. about 8"-1" thick
abounding in *Hypo.* and
Leiorhynchus. Above this to
the falls, the top of which
is at 24 the rock is ss.
At 23 was seen what
appeared to be *Hypo.* altho
it may be a *Leiorhynchus*.
20' above the falls a
Crinaria was found. The
basal bed of *Hypo.* here is
at 1263'. The *Spirifers* and
Ambocoelias came at about
22 near the bottom of the
falls.

One called from
labelled 193

Elevation is wrong
here - should be
1241' for
Hypo.

See p. 101

✓

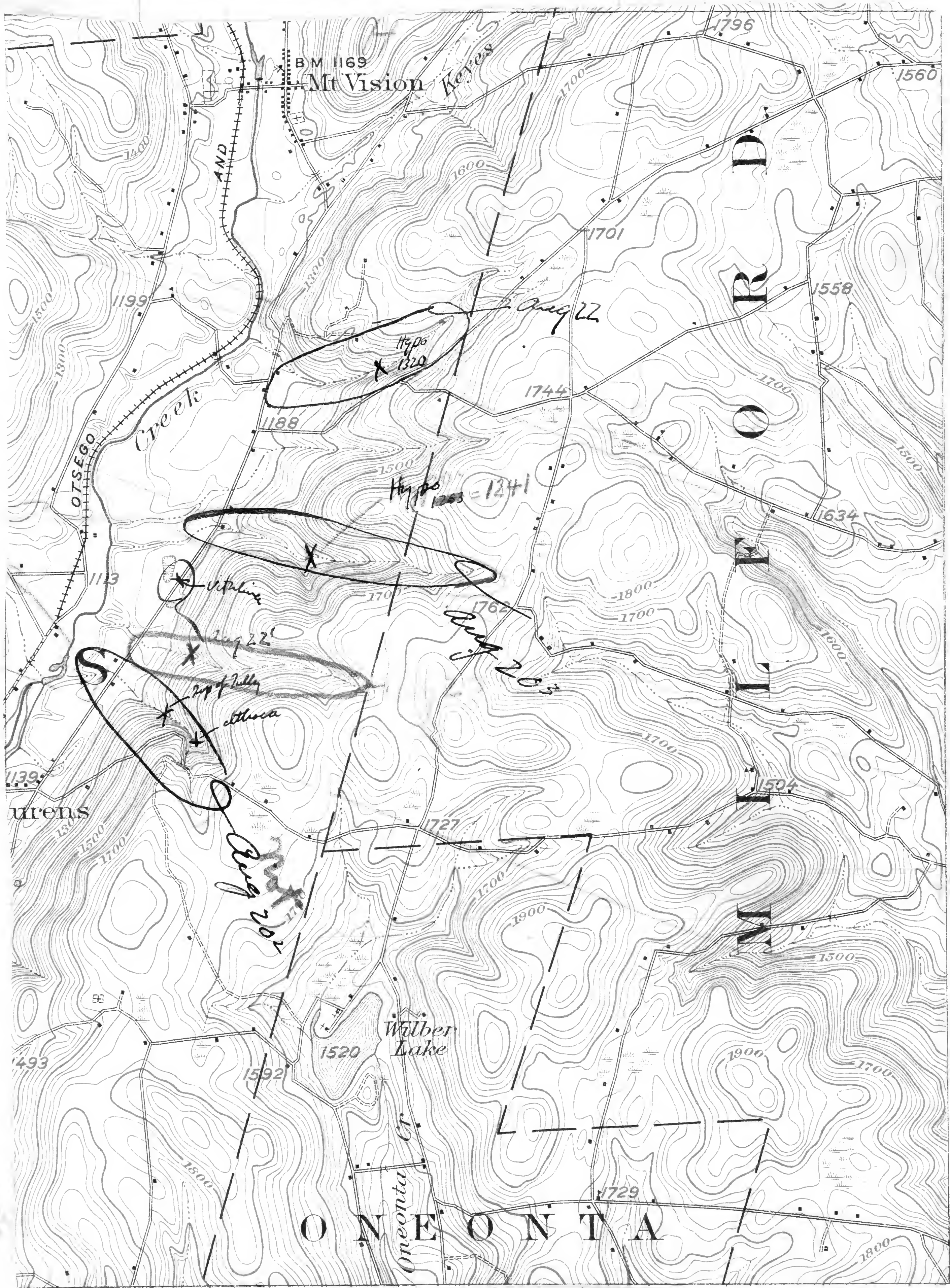
5.

2.5
0.3
—
2.8

In Okego Valley of figure dip on section, ~~to the~~
Buckhorn 1440, Des Moines 1734 + Okego 1180, to be
93' per mile, at this basis top of Housatonic
falls comes at 1232 feet or just about at beginning
of exposed section. The Vicksburg bed then comes
at 1153 in the gully of Housatonic. This
would make the gully just 70' thick and would then
the Okego near the top of Housatonic makes
the third gully of track. It has to make the
necessity of a ~~thickness~~ of a thickness.
of a possibility of a thickness.

1307

1314
1-70 1270



The horizon of *Hypothyris* seems to be very variable but it may be because I have really not found the base in all places. The locality N of Cumborn Lake had what looked like *Hypothyris* in the storm-rolled bed. At 19A³ *Hypothyris* occurred with abundance of a peculiar *Leiorhynchus* which extended some distance vertically. At Scherrens *Leiorhynchus* occurred below the storm-rolled bed. I cannot yet be sure of the base of Gully at any place really but ~~that~~ in ~~the~~ ^{the} gully above Lawrence where *Hypothyris* occurs with *Leiorhynchus*. This may mean that after all that storm-rolled bed is the top of the Hamilton.

Vertebrae covered around 1244
Hymenocyon zone of 1691

1316

76

Aug 7' restudied
John Flints gully. Restudied

Hand-buckling begun at 1310
0-16 covered

16-17 - Poor exposure of argillaceous
ss. that has a rough shaly
fracture

17-19 - Same, but about 3' below
top of 19 fossils occur

<i>Pal. constricta</i>	<i>Denticulifera</i>
<i>T. carinatus</i>	<i>C. coronatus</i>
<i>O. cuneata</i>	<i>N. angusta</i>
	<i>a. bydi</i>

19-20 same - partly covered
Here occurs *E. alvesta* like
those at the base of Hubbard
gully, indeed this horizon
suggests Hubbard

20-59 - covered.

59-60 - dark flinty argillaceous
shale, ~~no~~ no fossils

60-61 lower 3' in platy ss
upper part covered, no fossils

61-65 - covered

65-66 - upper 2' ss. with
plants

66-67 platy argillaceous ss.
without fossils

67-71 - covered - here comes
a falls of about 7'. Fossils
here are: *T. carinatus*

71-72 - brings is some distance

- above rim of falls - rocks
 in falls are thin platy ss.
 with *Leiopteria*. The top here
 was my step 74 of last time
 72-73 - platy ss. - *D. carinatus*
Leiopteria
 73-75 ss. with small *Camerozoea*
Cor. flabellus, *C. coronatus*.
 75-83 - covered, at E 3. corner
 3' of argillaceous that
 breaks into thick plates
D. cracrus *Camerozoea*
C. subtilis
Mottville sp.
 83-87 - mostly covered
 87-88 - heavy platy ss.
 88-89 - cross-bedded ss.
 89-90 - " " " with
Sp. mucronatus.
 90-92 - same cross-bedded ss.
 Don't get fossils because
 they are in lenses.
 92-94 - Dark arenaceous rock
 breaking into small pieces
 like shale, much like Earlville
C. agilis a, making up
 much of the rock in places
 94-95 - same shaly ss.
 fracturing like shale.
C. coronatus, *S. granulosa*
Pal. margin *Mott. Spinifer*
C. complanata
 95-96 - covered

96-97 - ammonaceous sh 1318

culminating in ss. at 98

97-98 Healy-bedded ss.

98-99 covered

99-102 - cross-bedded ss.

102-104 - 103-104 - sandstone
with *Camerozoechia*

104-108 - mostly covered - base
of 1st falls.

108-112 covered. Top of 1st falls

which is in thin shaly ss.
which has the appearance
of shale.

S. eximius *T. carinatus*

Worth sp.

Camerozoechia

Above falls on each side

are 10' of argillaceous gale
splitting like shale. Blue grey
in color. Not exposed in stream
above falls.

112-115 same rock in bank
at 115 comes end falls.

115-119 - at top of 119 comes the
Centronella bed in the middle
of ss. The second falls

Gradually become sandier.
Till at top it is platy ss. Rock
is exposed for 100 or 11' above
the *Centronella* bed brings
with *S. carinatus*. The
road is at 121. The *Centronella*
bed at make at 1925

232

119
595
1315

Aug 21

A 15 revisited 1819 99

Between 7+8 above Leiorhynchus
bed comes Sp. mucronatus, like
that of the Hamilton

Strongy

Hypso 0.7
Hypso 1.0
→

Section in road
0-1 - hard irregularly bedded ss.
saw no fossils

1-2 - In lower part of step
fossils abundant
H. venustula Teda Pal. emarginata
P. hiata S. mucronatus
J. carinatus Leiorhynchus
Clomys Actinopterygia

2-3 platy ss - saw no fossils

3-4 - H. venustula

4-5 - covered except for one
foot of ss. at top.

5-9 covered

Section was started 53' below
top of full cor. at about 1814' so
the first Leiorhynchus comes at
about 1825'

opposite
H. and J. gully

565

130
282
413
471

99
49
18
51
132
1734

400 paces from house toward of H.L. at
H. cl. was 565 paces to Hypso
This puts Hypso around 1840' which
is probably nearest right. This
would put the top of the Hamilton
at ~~1838~~ 1738

So far I have seen a
goodly number of localities
showing Hypothesis and not

one of them has been the same.
Here at A is the Leiorhynchus storm-
roller bed suggested the top of the
Hamilton but I saw no shells
in it that I could conclusively
call Hypothyris. The latter does come
in some 50 feet above the Leiorhynchus
as it does farther down the Valley
and at Schenecous. Over at Mt. Vision
the Hypothyris occurs with a great
abundance of Leiorhynchus. This
suggests that the storm-roller bed
might belong to the Tully. Over at
Mt Vision at least 40'-50' of rock
may safely be placed in the Tully.
Eastward the exact limit is obscure.
I have a hunch the Tully and
Ithaca merge eastward.

Aug 22-

1320

590 pages & 16 come first exposure

0-15 covered

15-16 - ^{blue} grey sandy shale with
Hamilton fossils:
S. tellus &

16-17 covered

17-18 - same grey arenaceous sh.
which extend up bank on
S side for 10' - only fossils
seen here were 5. - numerous
I. carinatae (10' above 18) & 8. fullin

18^u 25 - These shales line the
banks and are in the stream
bed all the way. Between 238
24 there is a 6' bed of
cross-bedded ss.

25-26 - same bluish shales.

26-28 - heavy storm - roller layer

~~28~~ 28-29 - Aptarenaceous sh.

29-30 - at base is a storm-
roller bed of about 2-3' containing
abundant Leiorhynchus and/
H. venustula.

About 24' above the brims of
the falls in ss. were found
Atrypa & *Ambocoelia*.

Above storm rollers are
5-10' of hard limpy
irregularly bedded ss.

About 24' above the brink of the falls in weathered ss. is a well formed ~~shale~~ Quaternaria and Atrypa. Also just this Atrypa bed is exposed and in fully to S. about it as the mass the still 25-30' of Atrypa above the Atrypa bed. This is covered up & near

Aug 20³
Ma

Harrison Farm

W. L. Houghtaling

Lowest Hypo bed abounds in
large *Leiorhynchus*. The rock
of the Hypo bed is a calcareous
Above this bed come some 25'
(50 ft) of cross-bedded

(5 steps) of cross-bedded +
plate, SD in which I saw
Leiorhynchus. At the top of
this interval are soft shale
for one-half foot. In these
shales were seen S. uncinatus
Bambesia, Leiorhynchus

5-6 - At bottom of steep, large
Leucophryxus, Rhodella,
Pal. constricta.

6-7 - mostly softish arenaceous shale, dark in color - with *Lacithyphorus* & *Sp. mucronatus*

7-8- $1\frac{1}{2}'$ of the soft crumbly shale
4' of ~~the~~ hard massive

Large Sp. *Strophodont*
Splanocratus
Mod. subulata

8-9 - About 1" up in this step is
a layer abounding in
Lecothamnium and
Hypothyridina
Abrenolopsecter. See p. 93
p. 11

See p. 93
p. 111

102
1322

Aug 22¹ - 0.3 miles south of
Gully at Aug 19³ is a road
cut in dark bluish grey
shales that weather to a purple
color on surfaces. At the level
of the road here Vitulina
occurs in great abundance.
This Vitulina bed is at ~~1175~~
1175⁴ - 1180'

Aug 22² - Exposure corner of
Glen Ave. & Maple St. - and
up hill. Dark blue-grey, sparsely
fossiliferous shales. Where
bridge & stream cross Leptolynchus
was found in the bank. These
rocks are evidently same as
those below Clarke's / Aug.
High up on the bank are
platy ss and arenaceous shale

Dip on Vitulina bed between
Otego and Susquehanna Valleys
is 63' per mile

1323/23

August 23 - Hard somewhat
calcareous massive ss.
that fractures irregularly &
shaly -

Fossils: - *Sacurus*, *S. acuminatus*,
C. coronatus aa, *Sp. mucronatus*,
Camerozoechia congregata,
Fish-scale, *Corn. flabellus*

This is a small quarry exposing
not over 10' vertical. Fossils are
common but are restricted
to calcareous lenses. I think
it is somewhere near the Mt. Hill

A23' - on roadside - lumpy shaly
ss. with *Camerozoechia*

Aug 23² - At about 1760 opposite
second house (15' on left) lower
hill are coarse ss. that
breaks in irregular pieces. Here
fossils are rare but characteristic

<i>S. acuminatus</i>	<i>Sp. mucronatus</i>
<i>Corn. flabellus</i>	<i>C. scitulus</i>
<i>Con. continens</i>	

This is the top of the Solsville
and occurs a little below
the level of the house or at
about 1750'

Aug 23³ - 0.4 mile ^{SW} from intersection
of Red Creek Rd. & Cherry Valley
Creek road are shales exposed
for 0.2 of a mile. These are in the

Lower Bridgewater. Large 104
Leiorhynchus is common. *M.*
pygmaea.

1324

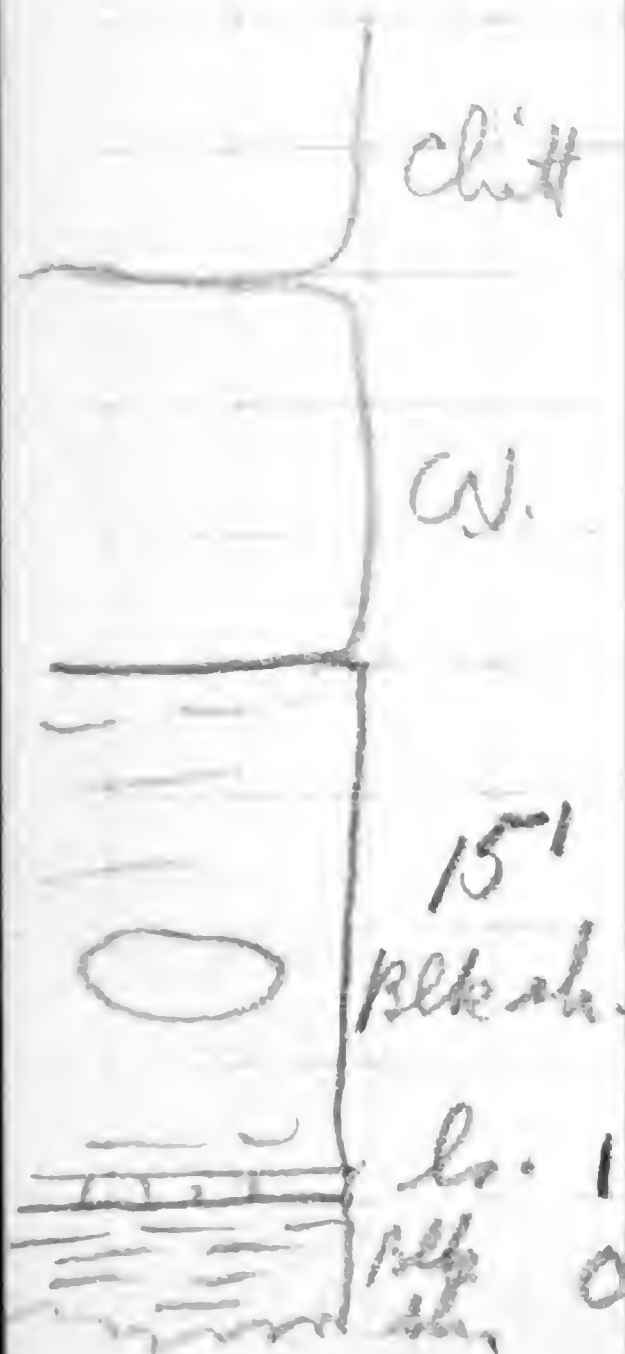
Aug 23rd - Coy's gully - Entered at
middle of two bends just above
cluster of 3 houses. This puts me
at about 1390' in the stream. The
Onondaga was not exposed in
the stream bed. About 25 paces
upstream from where I entered
black slaty sh. is exposed. 80 paces
upstream from where entered is
a low dam and pond. Beneath
the dam ~~at~~ about 3' is a bed
of concretionary dark smooth ls.
having *P. fragilis*. This is about
1' thick (1). Beneath it are black
fissile shales with abundance of
B. fissurella and *Leiorhynchus*

(probably limitaris). There are
exposed for about 3' (0). Above
the lower concretionary ls. are
15' of black shale with large
scattered concretions. Then
comes the Cherry Valley beds of
ls. and shale aggregating about
7 1/2 - 8'

At 220 paces comes 2' of black
sh. with concretions. The latter
give the sh. curved bedding

220-267 covered

at 267 comes sh and this
is exposed to the falls. where



36
22
66

12) 80°
6 2"

the Cherry Valley is again 1325/05 exposed. At 323 paces C.V. is about 10' above the level of the stream. At 370 comes falls over the Cherry Valley, the base of which is about 6' above stream level at base of falls. This would put the base of the bed at about 1435-1440'.

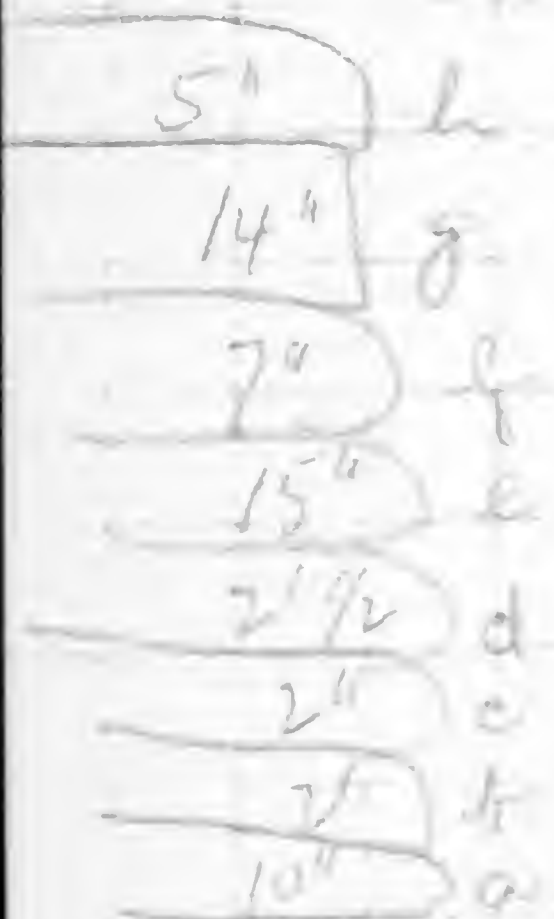
Section in Cherry Valley from Bottom up.

- a. 10" crumbly grey ls.
- b. Shale 2"
- c. smooth grey ls. 2"
- d. calcareous shaly ls. breaking like shale 2' 6" (30")
- e. crumbly ls. 15" This forms the brink of the falls. Nodular & shaly at top.
- f. shaly (calcareous) 7"
- g. massive crumbly ls. 14"
- h. irregularly bedded ls. 5"

85" = 7' 1"

at falls

average thickness of beds



370
80
1400
1

I am afraid I cannot check Clarke's section. The top of the falls is made up of hard ls. Actually the upper bed could be separated into 3 beds (as Clarke has done, 8, 4, 6)

The upper bed ~~forming~~ forming the brink of the falls can be ~~found~~ walked upstream for about 84 paces. On top of the bed forming the brink of the falls are 26" of rock, hard ls. the upper foot a hard bed and that below somewhat shaly. In making a section of this sort the location & type of weathering have a great deal to do with showing up the beds of rock. When wet a ls. may seem to be a sh. At end of section upper beds of 26" seem to be in 3 layers, upper massive bed 1' +, shaly layer 4", ls. 3", lower layer 8".

100 paces up stream bed goes into stream bed. This is near the old dam. This would be 530 paces from where I started section. C.V. dips SW very decidedly, this carries the dip slightly upstream.

At 1180 paces up stream comes the black fissile shale.
530 - 1180 - covered.

1180 - 1254 - same at 1254 comes a 7 or 8" bed of shaly ls. with

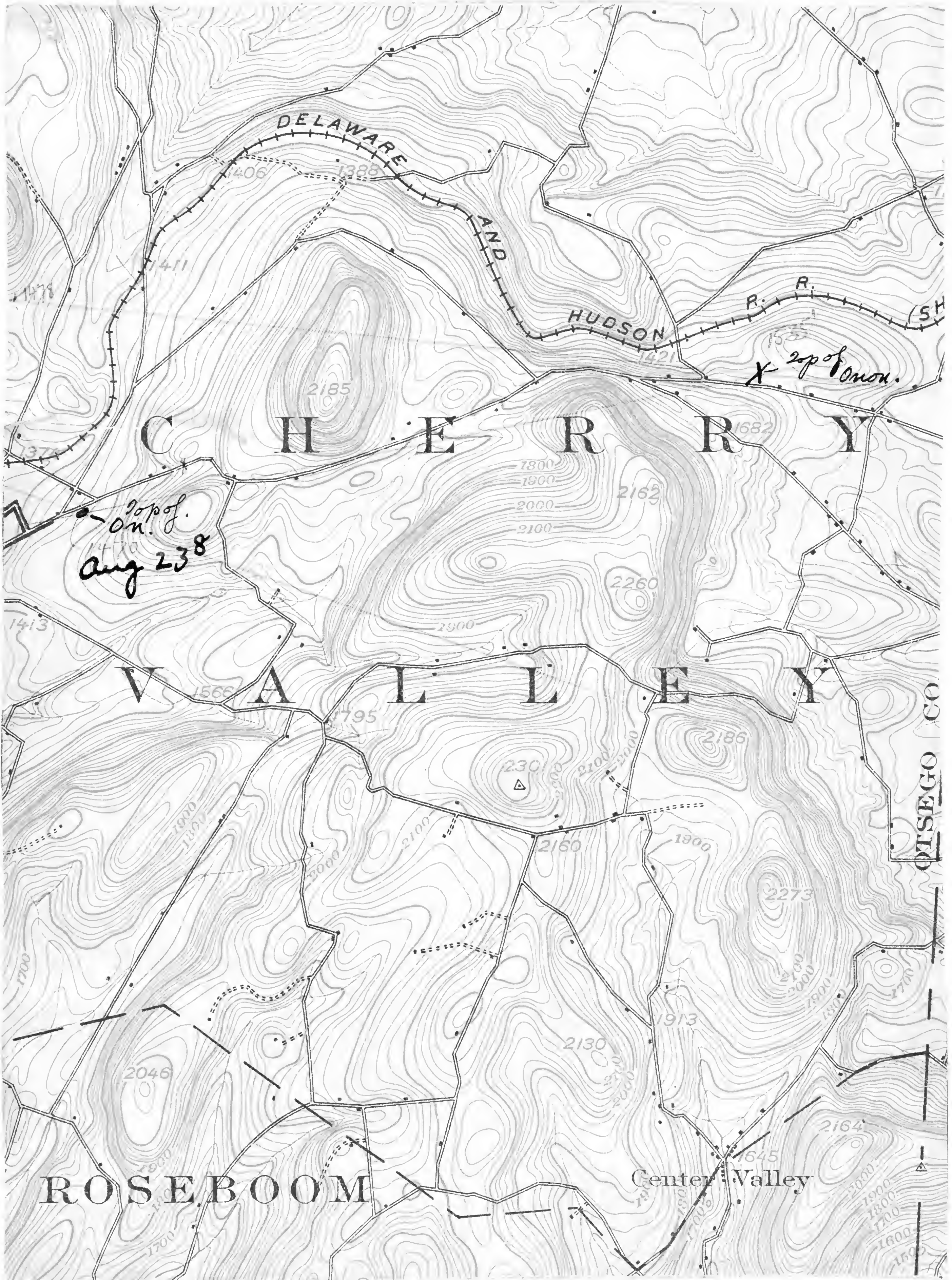
530
650
1180

fossils, *Strophalozia* & *Strophalozia*?
 In a little side gully, near 1327
 saw 30' of dark, black shale
 but no ls. At 1318 nodular
 ls. begins to appear. I measured
 strike here at $N 56^{\circ} W$ and a dip
 of 2.75° to the SW. At the falls
 a dip component was $1\frac{1}{2}^{\circ}$ at
 1415 paces the rock is again
 covered. This is clearly the
 upper Cherry Valley coming to
 the surface. This is proved by
 the 30' of black shale above
 the ls. The fossiliferous bed at
 1254 is very clearly the uppermost
 shaly transitional to the C.V. This
 second appearance is on
 Fairview (farm of C. Steenburgh)
 From my observation the upper
 layers only of the C.V. are
 exposed, not more than 3'.
 The upper 8" bed with *Ostracods*
 & *Strophalozia* I did not
 see at the falls. According to
 the contours it covered about
 45'. If Clarke levelled this
 section the discrepancies are
 easily explained as he levelled
 up the dip, greatly increasing
 the thickness of his section.
 In this second appearance
 is an upper layer of hard
 ls. of about 16", then below
 that a shaly nodular layer
 of perhaps 15-20"

Upper bed divisible into 2 (12" & 4")
 Above upper bed are 8-10" thin sh.
 with *Strophalozia*

1932

1327a



I think this bringing 128
up of the ls is a low dome or
anticline.

1328

Aug 23⁵ - grey crumbly or olive
shale - Bridgewater

Aug 23⁶ - Olive weathering crumbly
shale. This is 0.1 mile down hill
from road at top of hill

Aug 23⁶ - Exposure of about 6'
Upper part olive weathering
lower part dark-blackish
May be contact of Bridgewater
& Chittenango. This was 0.3 mile
from road

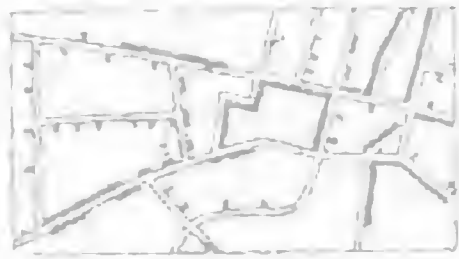
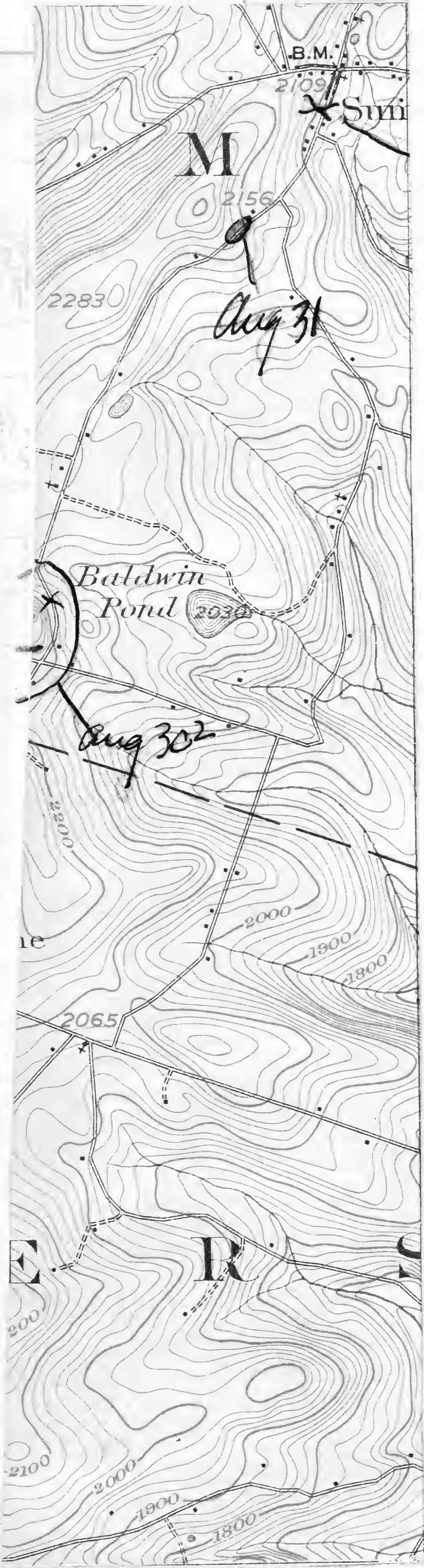
Aug 23⁷ - $\frac{1}{2}$ mile exactly from
road at top of hill this is
jet-black shale

Aug 23⁸ - Just 0.5 miles from this
road in outskirts of village is
ls. Top of Onondaga ls at 1470'

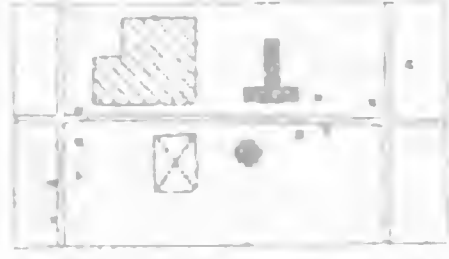
Aug 23⁹ - About 5' very hard
arenaceous rock with *Isomurus*
C. scutellus, *Sp. mucronatus*,
Leiorhynchus. This is same rock
as found falls on Gildersleeve
place.

Aug 23¹⁰ - Sparsely fossiliferous sh.
with *P. lilata*, *H. trigonatus*

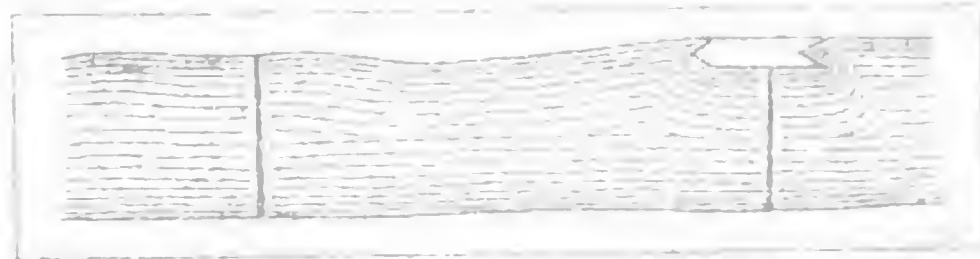
1329a 118a



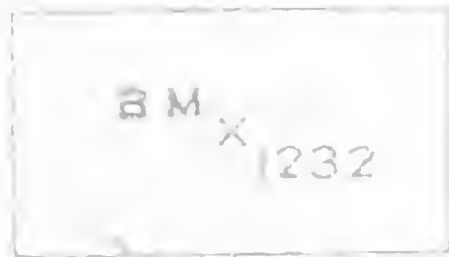
City or village



Roads and buildings



Dam Dam with lock



Bench mark



Cemeteries

(Temporary bench mark shown by brown cross and black figures without lettering)



Figures

(showing height above mean sea level instrumentally determined)



Contour depth printed



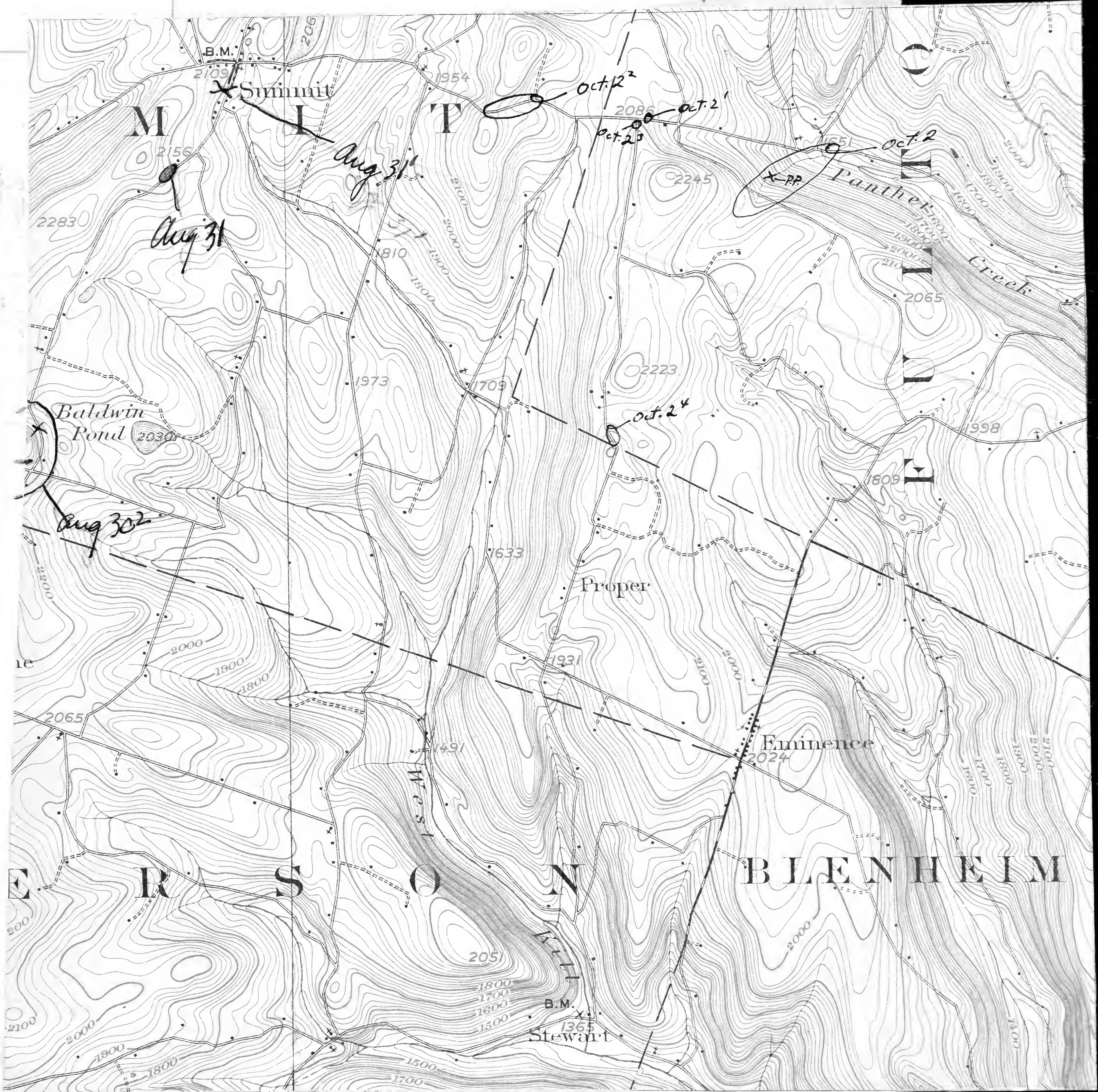
Wash



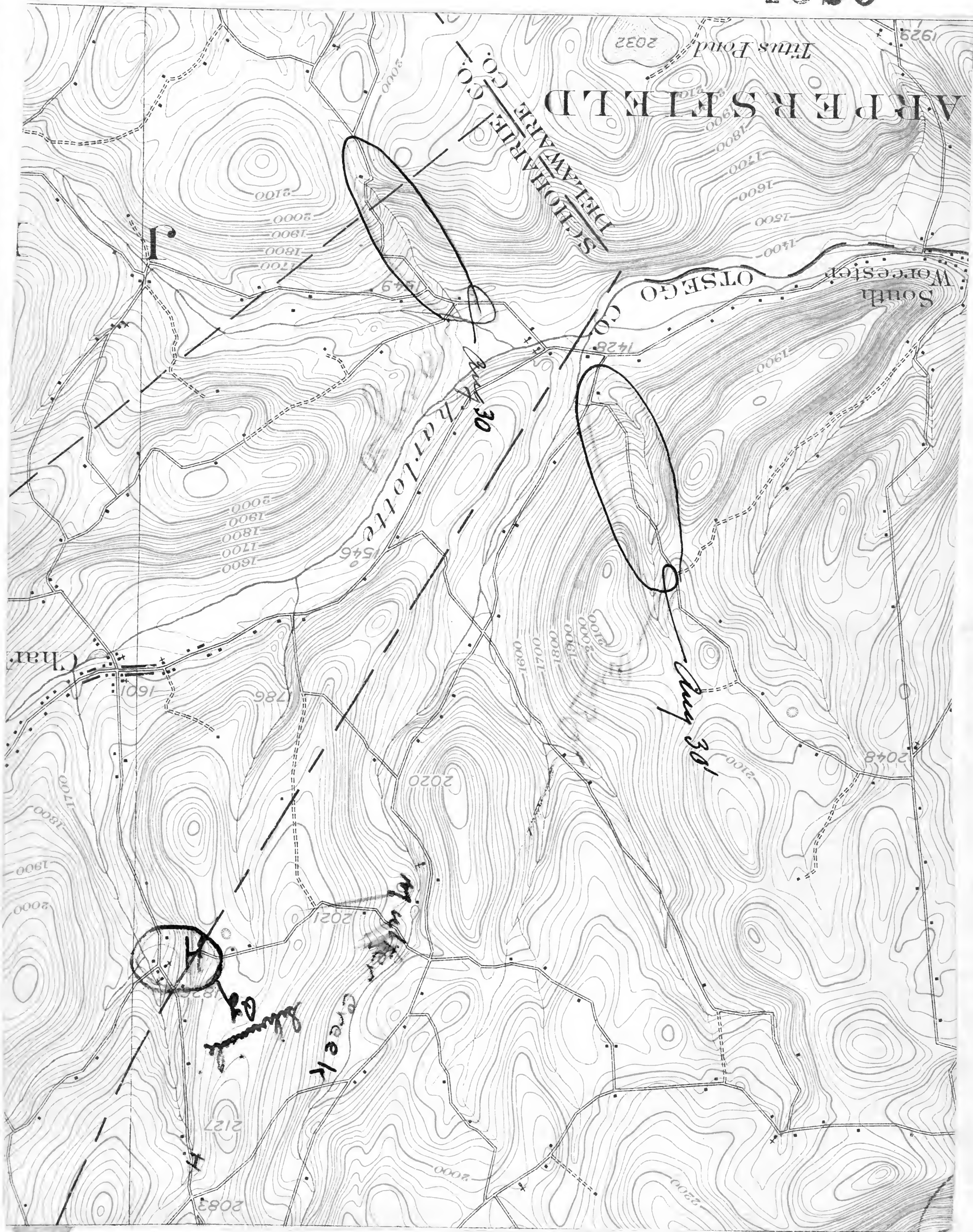
Cliffs

(or shown by contour)

118a
1329a

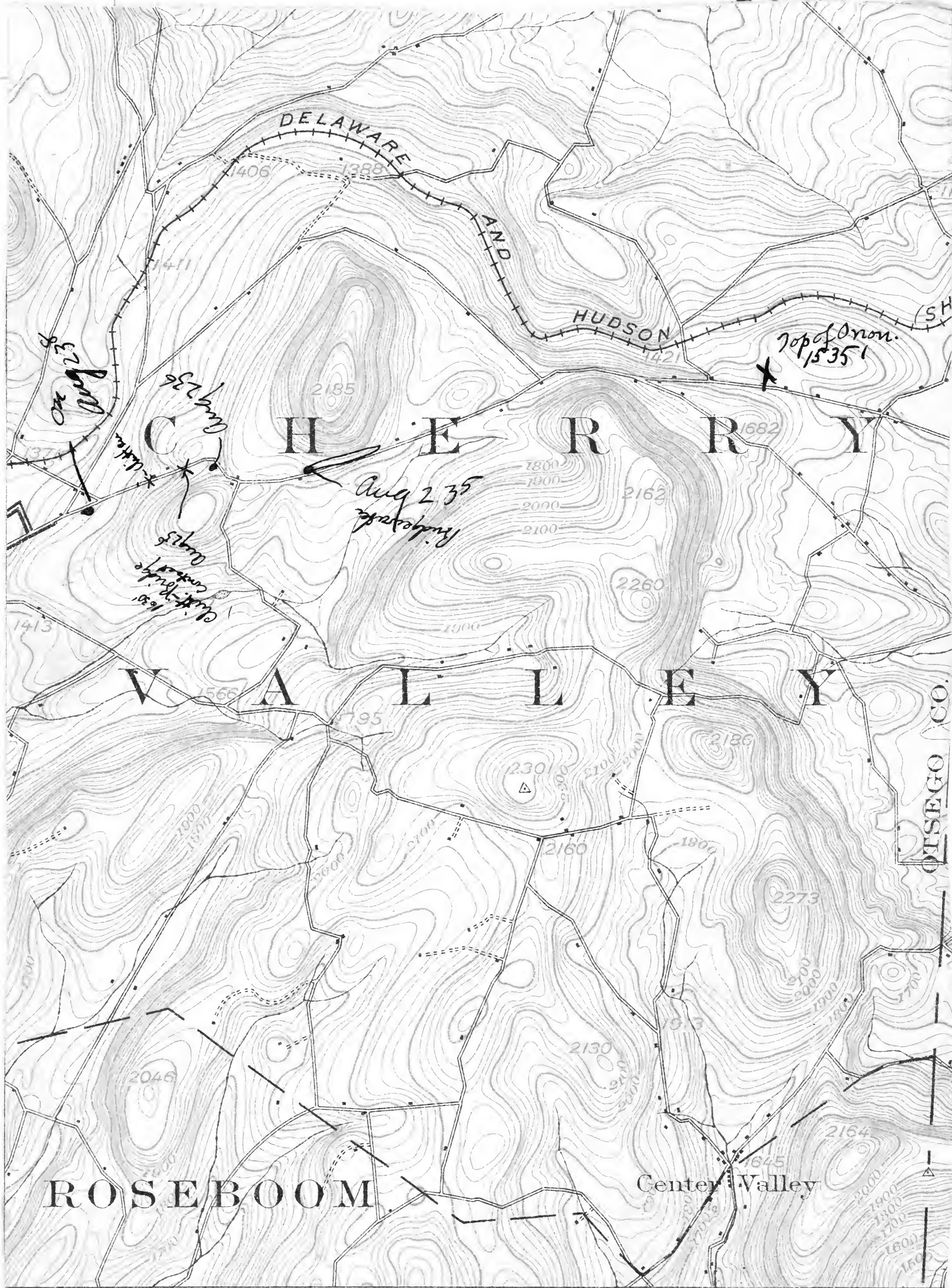


6231



10.8a

1330





J30⁵ revisited

109
1331

Handlevelling begun at 1239 at intersection -

0-21 covered

21-22 - dark gray shaly ss fracturing like shale

22-25 covered

25-26 - same hard of rock - no fossils

26-28 at base of 27-28 same *Leiorhynchus*

28-29 - same shaly ss with *T. submarginata*, *C. congregata*, *C. cornutus*?

29-30 - hard platy argillaceous ss with *Camerozoechia*

30-32 - same with *Leiorhynchus* + *Camerozoechia*

32-33 at base of 33 rock is shaler + *Leiorhynchus* is very abundant

33-36 - same *Leiorhynchus* abundant.

36-38 In 36-37 soft shales alternate with slabby ss.

Leiorhynchus, *Mottville* sp.

Top of 38 capped by 1' platy ss.

38-41 same. *Leiorhynchus* at base. Top is 1' cross-bedded ss.

41-42 argillaceous ss.

S. cratellus

Pab. emarginata

$$\begin{array}{r}
 69 \\
 \underline{5} \\
 345 \\
 \underline{11} \\
 355 \\
 \underline{1239} \\
 1594
 \end{array}$$

138

42-44- 42-43 is all ^{1/3} storm-roller bed and part **1332**
(about half) ~~the rest~~ of 43-44
is also storm-roller. Above
is ss.

44-46 same here comes the
Clarke Og. The ss in this
interval are full of plant
fragments 46-47- Cross-bedded
ss.

46-52 cross-bedded ss. with
limonite balls.

52-55 same - Ripples

55-60 covered

60-62 sandy shales with:
S. mucronatus, *L. perplanus*
Q. umbonatus c.

62-65 covered

65-69- Thin platy shaly ss, breaking
like sh.

1333

August 24 - visited Houghton's
gully with Miss Golding. At
the Atrypa zone we found
2 specimens of Sclerophoria.
This zone is projected into
the gully. North corner at
about 1270 or just about
at the horizon of Atrypa in
that gully.

See p. 93

August 25'

1334

112

Section in Tully - downstream
from bridge areaceous
rock without fossils
Hundlevelling upstream from
bridge: - about 1360'

0-2 - at base platy, distorted
ss. with Leiorhynchus. This
genus is abundant thru
the whole step.

2-4 shaly ss. in 2-3 without
fossils: 3-4

4-5 - sandstone without
fossils

5-6 - lower 2 or 3' hard
calcareous ss. with
Spirifer mucronatus.

6-10 - mostly covered

10-11 - 3' stony-roller rocks
Leiorhynchus?, Sp. mucronatus

11-12 covered

12-13 - heavy-bedded ss without
fossils

13-17 covered

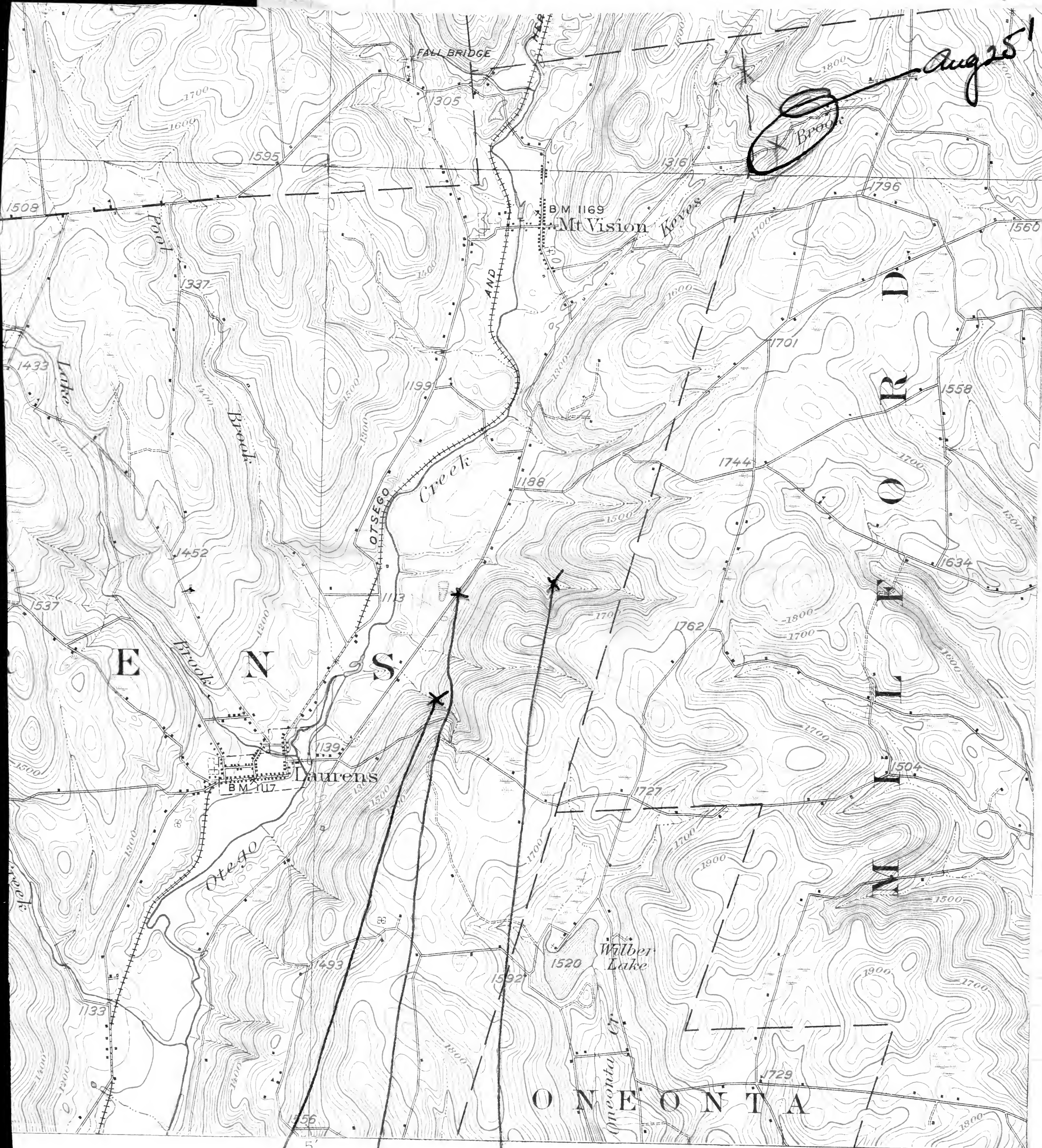
17-18 - about 6' of hard limy
ss. with Sp. mucronatus &
Leiorhynchus.

18-21 - covered

21-23 - mostly heavy-bedded
ss. with some shale. At
very top of interval comes
A. Boydii, Chonetes,
Sp. mucronatus.

1334a

Aug 25!



75°

Edition of March 1912, reprinted 1925

Polyconic projection. North American datum

HARTWICK

APPROXIMATE MEAN
DECLINATION 1910.

Handwritten: *Handwritten text, possibly a signature or name.*

1263'

2 3 4 Miles

3 4 5 Kilometers

feet.

[illegible]

by a hooked sand
 e into which small
 l on the right has a
 rs separated by ravine

CONVENTI

CUI
 (printe



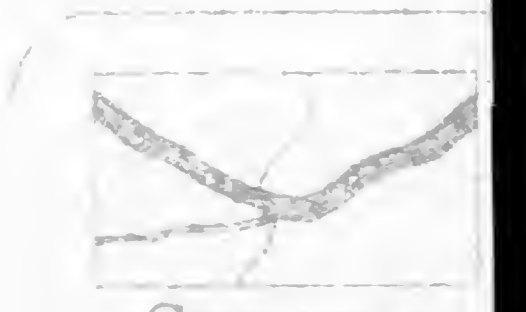
l or th Railroads and stations Ea ra



County line Civil township or district line



Oil wells Mine or quarry



Streams



d es



Intern la

(when show

1335

Aug 25'

Heavy, irregularly bedded
(knotty) with *Leiorhynchus* T
Hypo. Possibly corresponds to
heavy beds at falls at
Houghtaling's. 0.8 mile from
intersection

1336

August 26.

At Cooperstown R.R. Station and behind (West) of turntable is a large exposure of arenaceous lumpy shale rock (much like Lower Delphi) abounding in large *Tropidoleptus*. This is near the bottom of the *Tropidoleptus* zone, 50' above the top of the Solville. Other fossils are: *N. oblongatus*, *Camacotacchia*, *Sphenotus cuneatus*. In the lower 5' are *C. coronatus* and *Sp. acuminatus*, *Sp. mucronatus*. These fossils are very abundant in a calcareo-arenaceous layer. Also were seen *A. boydi*. The layer with *C. coronatus* is essentially a calcareous lens, thickening & thinning. This layer is about 5' from the base of the exposure.

A little above the *Tropidoleptus* and at the intersection of ~~the~~ Grove + Main Sts. are unfossiliferous soft arenaceous sh + ss.

Tropidoleptus zone is reached by following Main St. to R.R. tracks

10'

Trop.

Bed A

5'

crossing them, following them N along the base of the bluff to a point between **1337** the Station & Turn-table. The layer with *Sp. acuminatus* is 35' above the Solsville

Gerrimore Farm - restudied
hand-levelling from top of
Solsville

0-7 covered.

7-8 - 1' cross-bedded ss at base - no fossils. At top 1' of arenaceous shale with *Thopidoleptus caninatus* in abundance.

8-10 - *T. caninatus* is very abundant thru all of 8-9 and half of 9-10. In upper half of 9-10 *Mottville spirifer* becomes very common. The rock is all arenaceous shale.

10-11 - some saw no fossils

11-12 - same sandier & going into cross-bedded ss. at the top.

12-13 - *R. cyclops*, *Thopidoleptus*, *Camanofoechia* (all small). In fine-grained ss.

13-14 somewhat lumpy sh.

<i>B. sulcomarginata</i>	<i>H. deKayi</i>
<i>Cor. flabellum</i>	<i>Mottville Sp.</i>
<i>T. caninatus</i>	<i>Camanofoechia</i>

B. petulus *P. lirata* 1/6
14-15 - much laminated
material

15-16 - same shale

1338

Matville sp. *I. exigua*
I. carinatus.

Above 16 there must be
at least 5' more of shale
exposed.

Aug 26' -

15-20' of rather soft
arenaceous blue shales. Not
highly fossiliferous. These
shales belong just on top of
the Solsville

Grammysia sp.

Large *Prozoidoleptus* is
abundant 10' from base
of exposure.

In a layer about 4'
above the base of the
section are

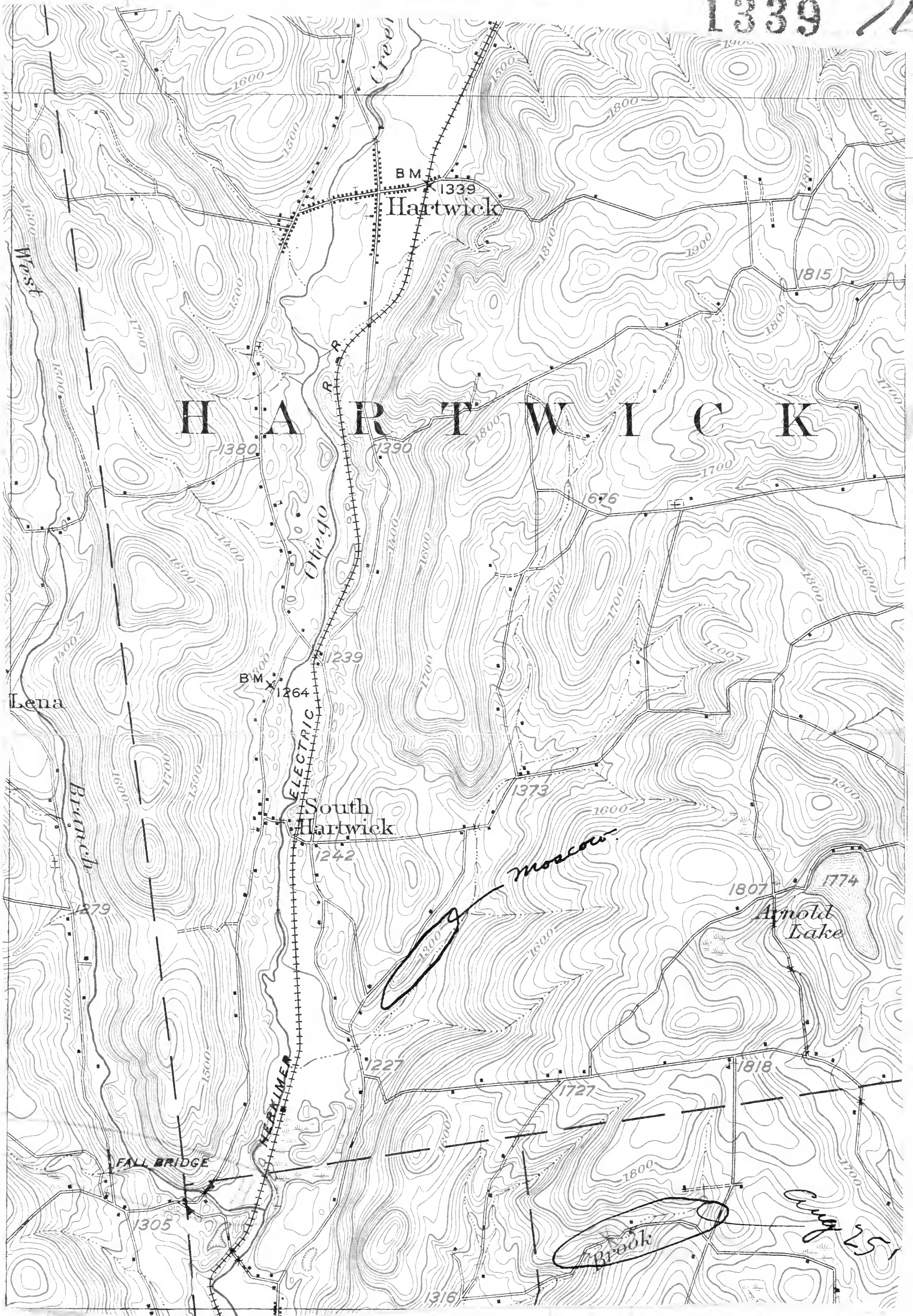
Schuchertella *C. coronatus*

A. boydi

Camartostichia

Sp. ~~*diversus*~~
acuminatus

1339 / 17



1630
1470
160

Aug 27 - On roadside ~~ten~~
 0.15 miles N of Portlandville
 dark bluish arenaceous shale
 with *Atrypa*, *S. fulleri*, *A. sp.*
 This is probably *Spinifer atrypa*
 zone. *Atrypa* was seen 10'
 above the road. This is
 same as Aug 19.

Aug 27' - Hand levelling begun
 at - 1160'

0-9 - covered

9-10 - cross-bedded ss. No foss.

10-11 - covered

11-12 - at base 1' hard ss.

12-13 - at top 3' cross-bedded
 ss.

13-14 - cross-bedded ss. with *S. mucronatus*

14-16 - covered.

16-17 - At top of step is 3' of
 storm-rolled but I saw
 no fossils in it.

17-18 - mostly covered

18-19 - thin shaly ss. - saw no
 fossils

19-21 - excellent exposures in
 2 low falls but I saw no
 fossils at all.

21-22 same

22-23 - lower 1' argillaceous
 ss. *Productella*

23-~~24~~ - Unfossiliferous thin
 ss. are exposed & within
 about 20' vertically of house

1341

18

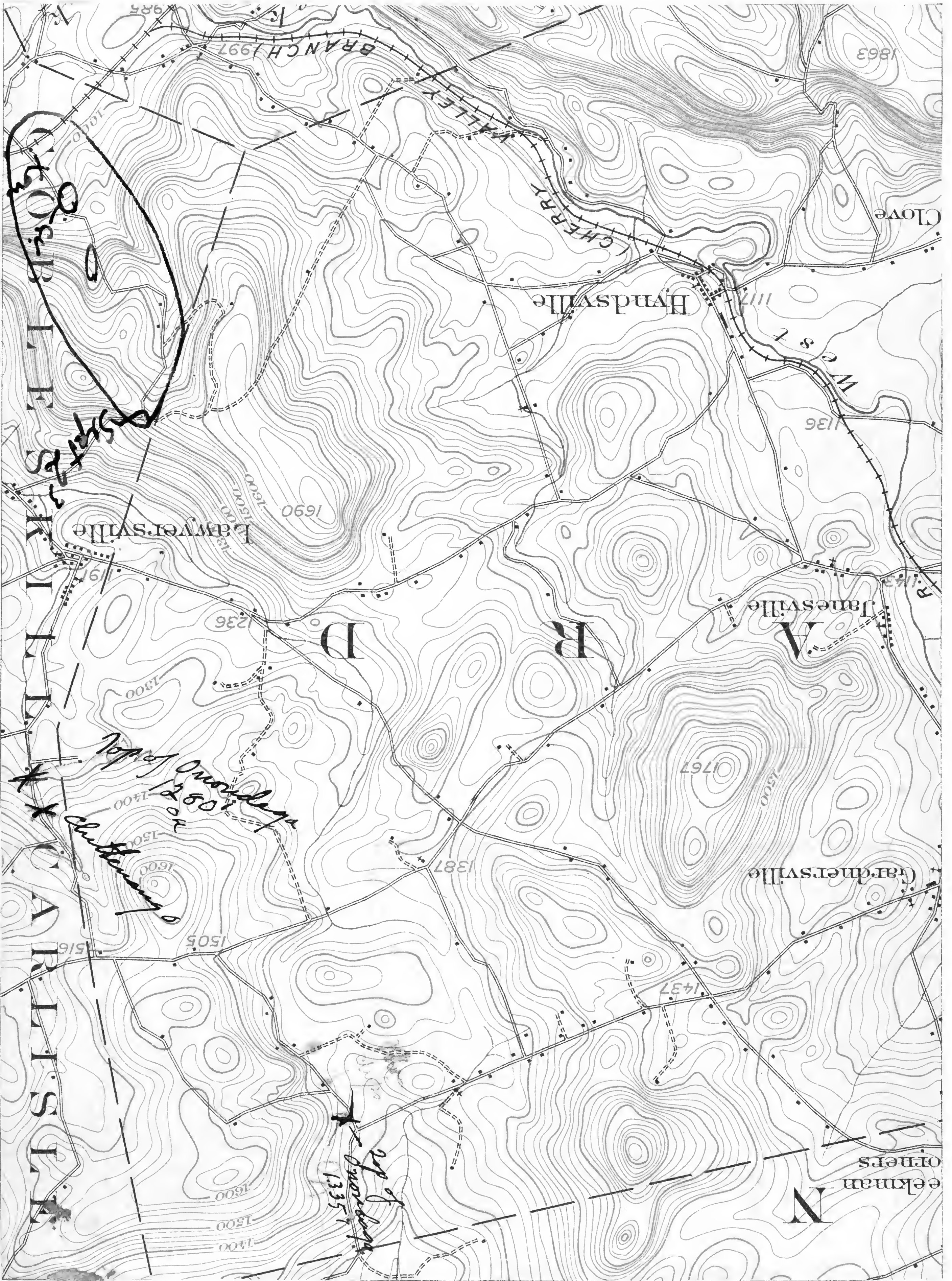
Aug 27th At intersection and
about 10' shales & ss. with
T. carinatus, *S. fullius* sp. mucronatus
This must be near the *Vitulina*
zone.

At exactly 1500' come
argillaceous ss. abounding
in fossils in lower part.
S. mucronatus. *Leiorhynchus*
P. emarginata

There about 13' of rock here
the upper 8' having plants
only. This is clearly *Dully*.

Aug 27th 80' of ss. high in
the gorge, probably 150' above
the road. Saw only *S. mucronatus* at the very base.

1341a



Richmondville - Summit 1960 August 29 1342

Hand leveling begun at 2100 at road intersection at A - Quarry road comes at 2190' - Above 30 steps or 150' above highway + Quarry road intersection at ~~2190'~~ 2190' comes the Vitulina zone. This is at 2340. This is in Summit hill. The ~~rock~~ rock is argillaceous sandstone with a slightly fractured.

at 2190'

Between 36 & 37 above highway comes a storm-rolled bed in very coarse ss. Saw no fossils 39-42 covered - floor of quarry comes at top of 41-42.

Fossils seen in dump -

<i>P. lirata</i>	<i>Sp. fullina</i> a
<i>Sp. mesactinolis?</i>	<i>Sp. mucronatus</i>
<i>Boniophora</i>	<i>Pal. emarginatus</i>
<i>Centronella</i>	<i>Leiorhynchus</i>
Large <i>Grammysia</i>	<i>I. carinatus</i> c

Section in Bay taken at road:-
At the base are 11' of coarse light blue grey, platy ss. which weathers red easily and abounds in clay balls. Then 2' of shale + sh. alternating. Above this are 12' of very thin slaty or phyllitic shale. The top 8'-10' of the Bay are argillaceous ss & sandy sh.

Leiorhynchus was found in place about 15-20' below floor of quarry on the west and

At the extreme western end of the gy. is the following section from bottom up:

Heavily bedded ss with clay balls - 14'

{ Thin dark shale alternating with heavy beds of ss. 14'

~~thin~~ bedded, platy ss. forming a flaggy layer - same as base of section at gy. road. 12' - 15'. Gy. floor

Shale going sandy at top 25-30'

Between the upper ss bed (15') is a 3' zone of ~~shale~~ ss beds with shaly partings. ss. very coarse. fossils abundant. *Troch.*, *Centronella*, *S. mucronatus*, *S. mesostriatus*?, *S. tullius*. At the very east end of the gy. this 3' zone becomes about 6' due to increase in sh.

Aug 29'

Clear outlet to Bear Gulch Lake at 1960' comes base of Portland Point which is here about 4' thick from where we found Vitulina to top of limy beds. The Vitulina bed is now becoming shaly and concretionary, but the

With
Leiorhynchus

1725

121

middle of the Portland
hard sandy ls. 1344

Ludlowville exposed for
about 50' below Portland
Pt. Here were seen Myosia-like
clam & Mottville Sp. a!

Ludlowville in Road
Aug. 29²

At beginning of section
arenaceous shale much like
the Earlville. In the lowest
10' were seen *Phthoria*
rectifrons, *O. undulata*. At 1725
is a layer with *A. reticularis*,
Cama doboechia, *Goniophosa*
Ham., *Sp. granulosa*, *Wood.*
concentrica

At 1775' a calcareous layer
made up of the Mottville Sp.
1780' in the bluish shale
comes *C. syrtalis*, *A. undulata*
Schuchertella

1785' The *C. syrtalis* is very
abundant here. About 8' above
it comes a thick layer of
cross-bedded ss. which has
at the bottom a shale pebble
zone - with *C. coronatus*
large *Corn. flabellus*.

1850' - calcareo-arenaceous
layer abounding in
Schuchertella, *Sp. mucronatus*
(wide & short), *C. coronatus*
Corn. flabellus

Portland Pt. at 1965' in road.

Beneath the Portland Point are blue shales and cross-bedded ss. of the Ludlowville. Along this road about 240' of Ludlowville are exposed and this is probably not far from the total thickness of this formation.

Between the Vitulina zone and the Portland Point, here are 374' (not allowing for dip).

In the quarry section some of the heavy ss weather red and are filled with red clay balls. This may mean that the red fingers of Onondaga come in at this horizon. In other words the Tully may go over to red-beds rather early. In this section it would be very difficult to draw the Hamilton-Tully contact unless we take it at the storm-roller zone but we found no fossils there.

1965
1925
240

2340
1960
380

1846

123

Along the road at the base of Summit Hill and around Bear Gulch Pond an extensive outcrop of Moxos and nearly a complete section could be constructed. Along the road on east side of Summit Hill the rocks are predominantly very coarse, cross-bedded ss. It shows clearly the passage of the Moxos into the continental facies. This is going to mean that in Schuchman Valley there will be in the Neocene thin fossiliferous layers separated by heavy beds of sandstone or non-fossiliferous rock.

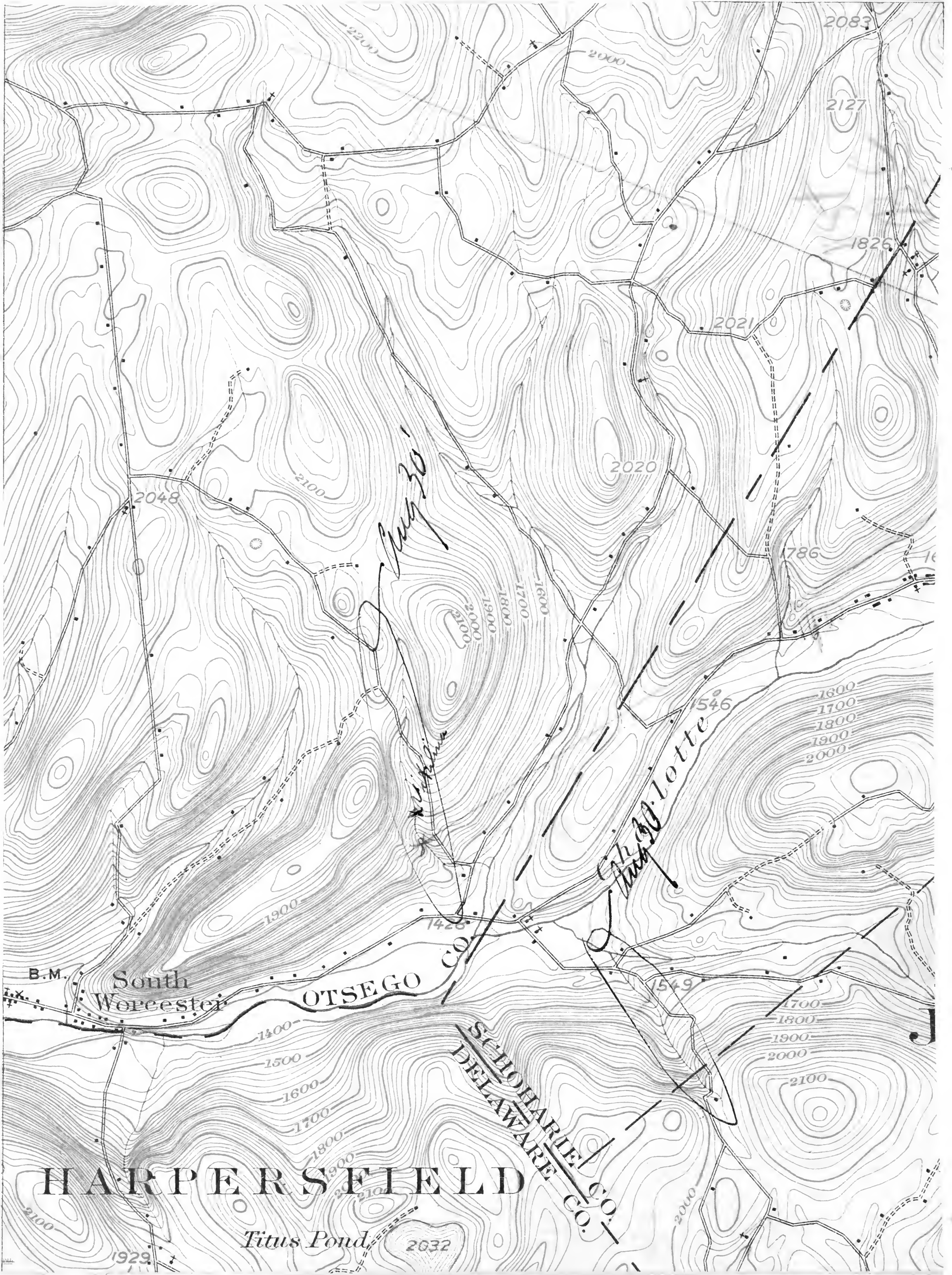
58

$$\begin{array}{r} 29 \\ 5 \\ \hline 145 \\ 5 \\ \hline 150 \\ 2190 \\ \hline 2340 \end{array}$$

$$\begin{array}{r} 25 \\ 29 \\ \hline 54 \\ 25 \\ \hline 79 \\ 11 \\ \hline 90 \end{array}$$

275

1346a



Aug 30

1347

Handlevelling begun at 1610.

0-2 At the very base of 0-1 are cross-bedded sandstones. No fossils. At top of step 1' of ss. with *Grammysia*. 2-3 - bedded ss. at base with fossils: *T. carinata*, *Sp. sumneri*, *Sp. pulchra*, *Cyrtina* form. Same at top.

3-10 - covered

10-12 - cross-bedded ss.

12-15 - mostly covered about 3' of smooth shaly ss (shaly) between 14 & 15.

15-16 - at base 1' of soft sh. Rest covered

16-17 - 2' soft smooth sh. Rest cross-bedded ss.

17-18 - cross-bedded ss.

18-19 - 1' of "

19-20 - Upper 4' cross-bedded ss.

20-21 - same cross-bedded ss.

21-22 - " " " "

22-26 - covered

26-27 - 3' cross-bedded ss.

27-28 - sh. + sp.

28-29 - covered

29-32 - Lower 10' of fine smooth dark shales. Upper 6' cross-bedded ss.

32-33 - covered

33-34 - smooth dark sh.

Vitulina zone should be here at 1553. *GR*

1610 1610
5

212
57
279

1610
1553
57
107

$$\begin{array}{r}
 80 \\
 35 \\
 \hline
 145 \\
 35 \\
 \hline
 150
 \end{array}$$

$$\begin{array}{r}
 43 \\
 3 \\
 \hline
 225 \\
 1610 \\
 \hline
 1832 \\
 1553 \\
 \hline
 279 \\
 113 \\
 \hline
 144
 \end{array}$$

571

$$\begin{array}{r}
 41 \\
 17 \\
 \hline
 24
 \end{array}$$

$$\begin{array}{r}
 2124 \\
 2524 \\
 \hline
 4648
 \end{array}$$

$$\begin{array}{r}
 1537 \\
 1240 \\
 \hline
 2581
 \end{array}$$

70
103
1460
1033

August 30'

Handlevelling begun at 1349'
 0-10 - covered. At 10 is a gap.
 in thin-bedded ss. 6' of
 are 6' of cross-bedded ss.
 Above ss. are 6' of arenaceous
 bluish shales. At contact
 of sh. & fossils are *S. fullius*
 & clay balls. In the shale
 are *M. concentrica*, *S. cuneatus*
 sp., *P. lumen*. Top of quarry
 is at 12'. At 10' to 11' a
 stream is falls over ss.
 11-12 - covered.

12-13 - Dark bluish Moscovite
 shales.

13-14 - bluish - *S. fullius*, *S. cuneatus*
T. cuneatus, *Atypa*.

14-16 same - A look was
 given here ~~that~~ had
Centronella in abundance

16-18 - the thin sandy shales
 change to thin-bedded ss.
 at top of falls.

18-19 - cross-bedded ss.

19-20 - about 1' from
 base of step is ss
 abounding in small
Centronella.^{*S. fullius*} Top of 20 a
 hard ss layer. Above
 are soft shales. 1563'

20-21 - soft arenaceous
 sh with *A. diversa*,
Tuberculites

81

$$\begin{array}{r} 145 \\ 1450 \\ \hline 1605 \end{array}$$

$$\begin{array}{r} 232 \\ 32 \\ \hline 172 \\ 176 \\ \hline 181 \\ 1450 \\ \hline 1621 \end{array}$$

74

Going up bank 30' 1350
 found rather soft shales
 all the way, with *L. diversa*
 At 1593' we found *Vitulina*
 about 4" above *Vitulina* came
S. spiniferoides, *S. granulatus*?
S. fullina, and *Vitulina*
 occurs in this bed too.

At 1625' comes cross bedded
 as at top of hillside. This
 is about 4 or 7' thick but
 is soft sh. & ss. sparsely
 in sh. & ss. This ss. contains
S. fullina & *I. caninatus*.

At 78 in stream bed comes
Vitulina. by barometer
 this is 1593'. 6' above 78
 the *Vitulina* bed forms a
 low cascade. The a layer
 abounding *S. granulatus*
 forms the edge of the
 cascade. *Vitulina* occurs
 above & below the *S. granulatus*
 28-34 - bluish soft sh.
 34-37 - cross-bedded ss.

1593

Same at at 1635
 37-38 - same - ss with
 abundance of *S. fullina*
 and *I. caninatus*

38-39 covered
 39-40 - argillaceous not sh.
 no fossils seen.
 40-41 - 2' of thin bedded
 ss. of Sherburne facies
 next covered

41-42 - 1' of ss in middle
of gap carries *I. carinatus*
+ *S. tuberosus*.

1351

42-43 covered
43-44 between in middle
of gap 1' ss. with abundance
of *S. tuberosus* + *I. carinatus*
between 47 + 50 ss 3'
of cross-bedded ss with
Trigloporus

Aug 30² - ~~The~~ Outcrop
in SE face of hill 2 1/2 mile
S of Summit on Summit
Jefferson Road. Along road
to S from 2200' elevation are
heavy-bedded coarse ss.
with some thin shale. On
hill side some 40 feet above
road at 2200 were thin
arenaceous sh + ss, also
slabs of coarse ss. Fossils
abundant. This seems to
be same horizon as at
top of quarry just N of
Summit.

Many fresh fragments of
quartz N of Summit

Aug 30th revisited - Outcrops
of heavy bedded ss. down to
2180' on bend in road.

1352

Aug 31 - On hillside arenaceous
upturned shale and a little
bedded ss. *Leda*, *Tentaculites*,
large *Grammysia* in the ss.,
Palaoneurice plana.

Aug 31st - mixed, soft arenaceous
shales with small *S. fulvus*
Sp. mucronatus, *Pala. plana*.
Tentaculites a, *P. tenuis*.

Aug 31st - at bend of road
in lower part of exposure
arenaceous sh. like the
lower Ludlowville at
Earlville, then storm-
rolled zone + cross-bedded
ss. Then more shale, thin-
bedded arenaceous. Fossils
T. carinatus *Myasa*-like clam
S. cuneatus Mott. sp.
O. undulata *Camarotoechia*

Aug 31st - Section along
Richmondville - Summit road
It begins at 1625'

~~0-2~~ ~~all but lower 1'~~ covered
On this are *S. granulosa*.
Sp. mucronatus.

Above are lumpy arenaceous sh. Calcareous limestones from *Leptotrypa*, *S. succinoides*, *S. bannanensis*, *S. mucronatus*.

2+3 - About 4' of base - 135' with shale, then comes heavy platy ss.

10' arenaceous dark gray sh. 3-4 - Top of ss. - and no fossils 4-5 - soft bluish sh. with *T. exigua*

15' sh + ss. 6-7 - same *Camptotrocha* & black concretions

7' crumbly green ss. 8-9 - same Above this are 2' heavy bedded ss. H. above 2' ss.

16' soft bluish sh. 10-11 dark green fine & crumbly shale, turning into green crumbly rock, which falls into small angular lumps

7' ss. no fossils - green rock capped by 6" fine dark gray sh.

15' sh + ss. 12 above green sh. alternating sh + ss. 15'

15' sh. Lumpy 13 upper 10' - *O. coronatus* *O. undulata*

A. princeps or *psabodus*, *S. granulobus*, *T. exigua*, *S. mucronatus*.

Aug 31⁴ - blow down and 131
along road opposite
dam, unfossiliferous ss.
at dam, great diapir of
storm-roller. 1354

Along the road just below
the bridge the coarse rock
corries (about 5' above the road
or at 1230'). The rock is here
irregularly bedded ss. with
hackly fracture. *S. acuminata*
and *O. chinensis* are common
just upstream from bridge.
at about 1240 - *S. acuminata*
beds go under stream. Above
them here are shale & ss
alternations of 5'. I think
Salsville must be about
5' below *S. acuminata* bed
toward the village.

Aug 31⁵ - Hand-leveling begun
at 1410.

0-1 - covered
1-9 - At base thin bedded sh
& ss beds going into
argillaceous ss. up to a shaly
fracture. *Leiorhynchus*
Leiorhynchus seen at 8-9.
9-10 same
10-11 - near top of step is
sandstone layer in which
we saw a 1/2" pebble of quartz
C. coronatus.

11-13 - dark sandy sh. with 132
H. triquetra

1355

13-18 - same - between 17 & 18

C. congesta & Triophteria

18-19 - argillaceous ss with
shaly fracture

Son. ham. C. congesta

Narguta S. granulosa

S. bulbata Noth. sp.

M. mytiloides P. maxima

19-20 - same - M. mytiloides

Camanopecten

20-21 - shaly rock

21-22 - shaly ss

Aviculopecten sumerensis

A. spidifera M. congesta

22-23 - thin-bedded ss.

23-25 - " " "

25-27 - shaly ss. with

Narguta, E. sinclairi

27-28 - coarse ss

28-29 - covered

29-30 - very thin-bedded ss.

30-31 - at middle of

intercalated sh. - fossiliferous

with I. carinatus a, L. perplexa

M. mytiloides, Camanopecten

31-32 - fine arenaceous

shale with a fossiliferous

layer at top

Narguta a Cam. glabella

Schuchertella Son. ham.

S. granulosa

L. perplexa

P. vermiculata

$$\begin{array}{r} 13 \quad 37 \\ \times 43 \\ \hline 181 \\ 1410 \\ \hline 1591 \end{array}$$

32-33 - some fine ss with 133
shaly fractures

N. angusta
Prædictella

1356

33-34 - crumbly shaly ss.
Comm. *flabellus*, *N. oblongatus*

34-37 - soft shaly ss.

At 1620' comes 3' cross-bedded
ss. with *I. carinatus* a, *cinereus*
stems.

1635' cross-bedded up for 10'
then comes sandy sh.

At 1650 in sandy sh. area

O. undulata a

This shale goes about 10'
higher. This is near base
of section at A31³ ~~begins at 13~~

Aug 31⁶

Section begins at 1300'

0-3 - Thin-bedded dark grey
shale with thin layers of
ss. Dark shale carries
L. laura (very large)

3-11 - At top ss. with
Ammonofoecchia, *Sp. mucron.*

11-12 - same ss.
I. carinatus a
C. congregata
W. H. Wille sp.
S. granulosa

12-13 dark grey dr. ss.
fossils

13-14 - cross-bedded ss.

- 14-16 - cross-bedded ss.
 at 15-16 in mudstone
 hard ss with *C. coronatus*
G. erectum, *I. carinatus*
 Clay balls, fossil zones of
 clay balls go further
 Upper 2' crumbly, blue-grey
 shale that falls to chips.
 16-18 - Dark blue shale
 becoming sandy at top
 is *S. mucronatus*.
 18-20 - covered
 20-21 - cross-bedded ss.
 21-22 - sandy sh crumbly
 in hard ss.
 About 10' above this stop
 in field was a stream valley
 road.
 Section ends behind house
 in field & halfway between
 houses on W side road.

Aug 31st - About 1190' thin-bedded
 platy ss. with *Cameroecchia*
 These are exposed for about
 20' below road intersection
 and run up into the
S. acuminatus exposures.

Sept 1 - At bend on road 135
to station are heavy ss beds
much like Solsville **L358**
lithology with *Camarotoechia*
Just N of R.R. station along R.R.
is rock having Solsville
lithology, (about 10'), capped by
2' lumpy sandy rock. We
saw *Spirifer* at contact.
Calcareous angular concretions
occur in the top of the heavy
beds.

Sept 1' - Below bridge just N
of Richmondville. At level of
river are knotty, arenaceous
shales abounding in small
concretions which are the
only indications of bedding.
About 1' above river level
occur.

P. rugulata a, *Camarotoechia* a
Spirifer sp., *Leiorhynchus*,
N. corbulariformis, *Bucania* sp.
This rock becomes coarser
above and some 30' up the
road it is coarse, irregularly
bedded ss. like the Solsville

Sept 12 - Entered R.R. cuts from
road 1/2 miles S.W. of Waverly.
400 paces to east of this road
begins the highest cut. At
the extreme E end of the

cut, which is nearly $\frac{1}{2}$ mile 36
 long and about 75' of fine 1359
 dark shale that crumbles
 into thin chips. Above this
 are about 50" (thicknesses
 estimated) of somewhat
 lumpy little arenaceous
 rock, like layers of
 which abundant *Leptæna*
 All of this below the Solville
 There is one bed of heavy
 so about 6-7" thick.

In lowest
 beds here
 some
Leptæna

Sept. 13 - Two miles W of road
 crossing comes a section in
 the heavier beds. At bend in
 RR about $\frac{3}{4}$ mile from road
 crossing at 1180' fine heavy
 ss. we found the Solville
Cor. flabellus. For 65' above
 the *Leptæna flabellum* come
 similar heavy bedded,
 irregularly bedded ss. very
 sparse in fossils. It
 appears that the lower
 Pecksport - or the whole
 Pecksport has passed
 over to Solville lithology.
 At about 1260-70' we find
 heavy ss. beds that have
Leptæna, *Cor. flabellus*,
Cor. flabellus.

At 1300 on hillside comes
 15' of fine, thin bedded sandstone

bedded ss. without fossils 137

1360

51⁴ - RR cut just W of 1st stream W of road crossing - In cut about 10' of heavy bedded calcareous ss. in which we saw no fossils. About 70' above this a coarse ss 5' thick in which we saw a possible *Dosselitia*. This is at 1225'.

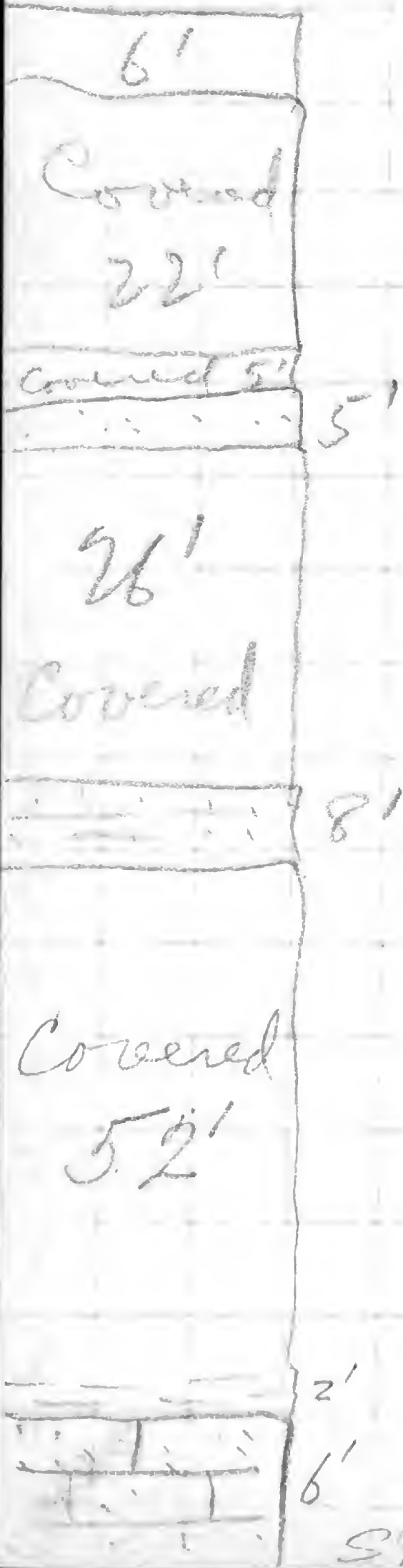
Here also
S. myoplana
C. agathina

Dip strike measured at mile post B94-A49 is N60°W 4°SW.

51⁵ - Up road near Clove - started at 1180' - From here to 1320 were exposures in soft micaceous sh. At 1320 come *R. vanuxemi* & *Leiorhynchus*. At 1345 we saw *Brannysia*. After 1345 section was covered to 1st house. Here at house which is at 1420 we saw irregularly bedded ss. with abundance of *Canarotocaris*. Section covered to 1510 where there is a patch in the road with *S. mucronatus*, *I. casimirus* (large). This may be Peckport.

51⁶ - Top of Onondaga - N59°W 30°

bridge over Goshpitt are 1070'
 and top of heavy rocks at station are
 at 1200'. This would make Solville
 heavy beds nearly 100' thick



September 2- 138
 Richmondville station 1361
 revisited - Rocks just N of R.R.
 station are at about 1200'
 elevation. This is practically the
 top of the heavy-bedded Solville
 like ss. In an effort to determine
 if the rock at the station is
 Solville I climbed hill N of
 station. 52' above heavy rocks
 at station is a ledge 18-20' thick
 of fine thin-bedded shaly ss.
 26' above this is a 5' ledge in
 thin platy ss which have
 Camarotoechia in abundance
 Then there are 5' covered, then
 come 3' of thin-bedded cross-bed.
 ss. 22' covered - 6' argillaceous
 ss. but I saw no fossils

Sept 1st - revisited - 350 paces E
 of R.R. station the heavy Solville
 like beds are track level. These
 beds at track level are apparently
 the similar ~~to~~ those at the station.
 At 350 paces, 13' above the heavy
 beds are covered then come
 6' ledges in fine-grained shaly
 ss. At 475 paces the R.R. cut is
 about 9' high and these ss
 rocks are 76 feet above the
 R.R. ~~the~~ In these upper beds
 was seen a Goshpittia or
 what appeared to be Goshpittia

In these upper beds also **1362** 159
occur *L. perplana*. At 541 paces
the upper beds are 35 feet above
R.R.

Here at 541 paces 15' of hard
calcareous sandy rocks are
exposed. Between 5 + 10' above
the R.R. tracks *Corn. flabellus*
is abundant and also *S. mucronatus*. I am convinced
that this is definitely Solsville
in these coarse calcareous
beds. The 20' above these I
am not sure about but
they seem similar to Solsville
lithologically and the presence
of a *Dosselittia* is helpful.

At 541 some of the heavy
calcareous blocks have been
thrown out. Some of these
show fossils:

A. princeps *Corn. flabellus*
Camarotoechia *S. obsoleta?*
L. perplana *S. decemnotatus*
Component of dip on these
beds at 541 paces is 10. These
calcareous beds are located
at end of the R.R. cut east
of the station. Then there is
a long covered interval of
about $\frac{1}{4}$ mile where a gully
cuts thru, being the first
gully E of the R.R. These
calcareous rocks have
pores filled with sand & lime
just like the *S. obsoleta* & *S. flabellus*.

Moraine: The tubes go in all 140
directions in the rock. Cut
ends at about 600 paces **1363**

Here there are 35' to top of Upper
beds. Here are 2 ledges of 10' each
separated by a covered interval
of 15'. At 1230 comes second
cut. At 1432 rock becomes
shaler. Typical, Solsville gads
somewhere here. At 1515
a 1' bed of heavy ss. is at
Track level. Here at 1655 is
where we scrambled up bank
& saw 1st Corn. flabellus at 1180'

At 1872 paces comes mile-post
B94-A49! N 70° W 40. Z Z

Richmondville R.R. Station is
at Mile post B93-A50

Section W of R.R. Station—

At 188 paces W there are exposed
on the N side of the track 5'
of the heavy bedded ss of the
Solsville & above it about 10'
of crumbly arenaceous shale
just like the Pecksport. From 188
to 375 paces the heavy beds are
exposed about 3' above track
level and there are splendid
exposures of the soft
arenaceous shales above. At
the contact of sh & ss. came
P. lirata, *S. mucronatus*,
C. coronatus. In the soft
rock comes *C. sigmoides*, *N.*
aranta, *L. mucronatus*.

Sept 2¹ - handlevelling begun 41
at intersection: 1222. 1364

0-5 - covered

5-6 - dark bluish shaly ss
with *Camarotoechia* or *Lecorhynchus*

6-14 - rock becomes gradually
harder till it is a hard
argillaceous ss. at the top of 14
saw only *Camarotoechia* in lower
part. This is at the strong
bend in the road. Here I left
the road & went up the gully
where handlevelling began at
9 H₂ or at 1268'. 0-16 dark
grey, shaly ss that breaks
like shale - saw no fossils
at 1300 is a flat in the stream.
6-8 comes soft crumbly argillaceous
shale.

When passing S. 1² I took a dip on
rocks from State Road - was just
10°

Sept 2³ - Onondaga in road
0.1 mile N of highway intersection
In little gully alongside stream
~~at top~~ and at last house on
left going N is an outcrop of
Cherry Valley ls. This exposure
is not like that at Cherry
Valley as it consists of a few
heavy beds only. I do not

know if the whole sequence 142
is exposed. From top 1365
Onondaga to lowest exposed
bed is 14 steps or 76'. Since
we are going up the dip the
Union Springs will certainly
be exaggerated.

- 1- Bed 1 is smooth dark grey
fine-grained ls., nodular on
upper surface. Saw no fossils.
- 2- Black sh & concretions ls.
3. Fine-grained, sugary, uneven
fracture - only small.
4. Black even grained ls.

ls 1'

Heavy ls
2'

Stratified, fine
1 1/4'

2-2 1/2'
Very ls

- 3 Saw no fossils in place
or on loose blocks. Total
thickness about 6'
- 2
- 1

At crest of hill at 1525' and
over top of hill are numerous
dark gray sh. which I believe
are above the Athyris zone.

Harris Quarry

Sept 24 - On 0.3 miles west of
Richmondville and 60' above
the road about 15' of rock are
exposed. Top of quarry are
heavy beds with Union-Springs
weathering. The only fossils
seen in the lower part of the
quarry were *P. lirata*, & *Gon.*
hamiltonensis. At the top of

the quarry at the contact of 143
the heavy ss and the ~~sh~~ **L366**
crumbly shale were seen
P. lirata and Corn. flabellus. This
quarry is exactly the same
as the R.R. cut just west of the
station. The quarry is at about
1150'

40' above quarry is a ledge 5' +
of fine argillaceous ss. with-
out fossils, just like the rocks
above the R.R. cut.

A large clam like *Soraeletia*
is in the heavy beds of the quarry.

About 25' below the quarry
in the road is a ledge of
hard irregularly bedded ss, the
Solsville

Hannis
Quarry

sh
+ ss 5'
Heavy-
bedded
ss. 15'
sh
heavy
ss 1'

September 25 - There are about
50' of rock exposed in the
stream between Richmond-
ville main St., and the
bridge on the first ~~stream~~ ~~to~~
street to the South. At the
dam below the bridge are the
heavy ss. beds of the

Hannis quarry. Below these,
I would say at about 30'
up were calcareo-arenaceous
beds probably belonging to the
Solsville. I saw no fossils
and could not separate the
beds. It looks now as if the
whole of the heavy beds at

the R.R. station had better 44
go into the Solsville 1367

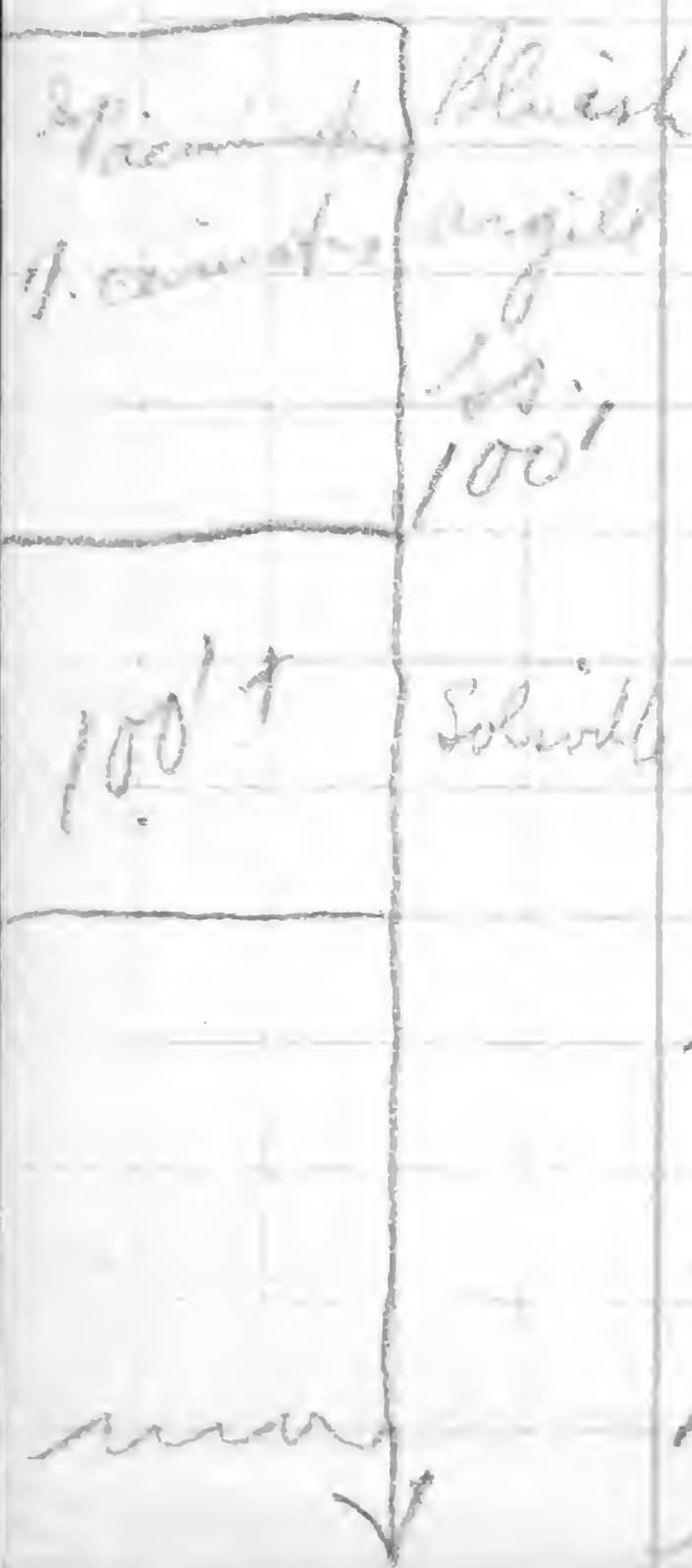
The beds with Sp. acuminatus +
I. carinatus are at about 1235'
and the top of them is in the
stream at 1240-1245' and puts
them about 90-100' above the
Solsville

Digest of Richmondville section
On the R.R. cut 1 mile SW of
Warnerville can be seen
beds that are not far above
the Athyris zone of the Bridgewater
These beds grade upward
gradually into the Solsville
and the section can be studied
in detail to the Richmondville
R.R. Station. About 600 paces
East of the station heavy
calcareous ss. beds are exposed
which have Solsville fossils.
These are covered by about
25-30' of coarse sandy beds
containing few fossils. The
fossiliferous Solsville with
Cor. flabellus in the upper
beds has peculiar arenaceous
rods radiating through the
blocks. This is unquestionably
true Solsville. The 25' above
is conventional ss. with a
lithology like that of the
Solsville. I think this is
a new bed placed at top
of Solsville but for

145
 practical purposes it
 should not be separated.
 Above Solville are probably
 fossiliferous sandy, bluish
 argillaceous ss. culminating
 in arenaceous beds abounding
 in *S. acuminatus* & *S. carinatus*.
 Then follows sh. & ss. with
L. thyrus and on up into beds
 with *Myassa* etc. Up to the zone
 of abundant *Myassa* is 320'. This
 must be near the end of the
 Sublowville. *S. macrodonatus*
 occurs 385' above *S. acuminatus*
 beds.

In Bear Gulf the Portland
 Point is exposed at 1960' and
 fossiliferous rocks can be
 studied from this bed in the
 gulf and along the road
 down to 1625' and I am sure
 all these are in the Sublowville
 making at least 335' for this
 division. I believe the *Atrypa*
 beds are probably near the
 base of the Sublowville.

There must be nearly,
 possibly more than 1000'
 of rocks between the Solville
 and the Portland Point. There
 must be close to 400' of Moscow
 here. I estimate the section
 from the top of the Solville
 to the Vitulina bed to be
 1500'. If *Macellus* is 7-800' - we
 have a thick Hamilton



boundaries. The conventional signs used to represent these features are shown and explained below. Variations appear on some earlier maps, and additional features are represented on some special maps.

All the water features are represented in blue, the smaller streams and canals by single blue lines and the larger streams, the lakes, and the sea by blue water lining or blue tint. Intermittent streams—those whose beds are dry for a large part of the year—are shown by lines of blue dots and dashes.

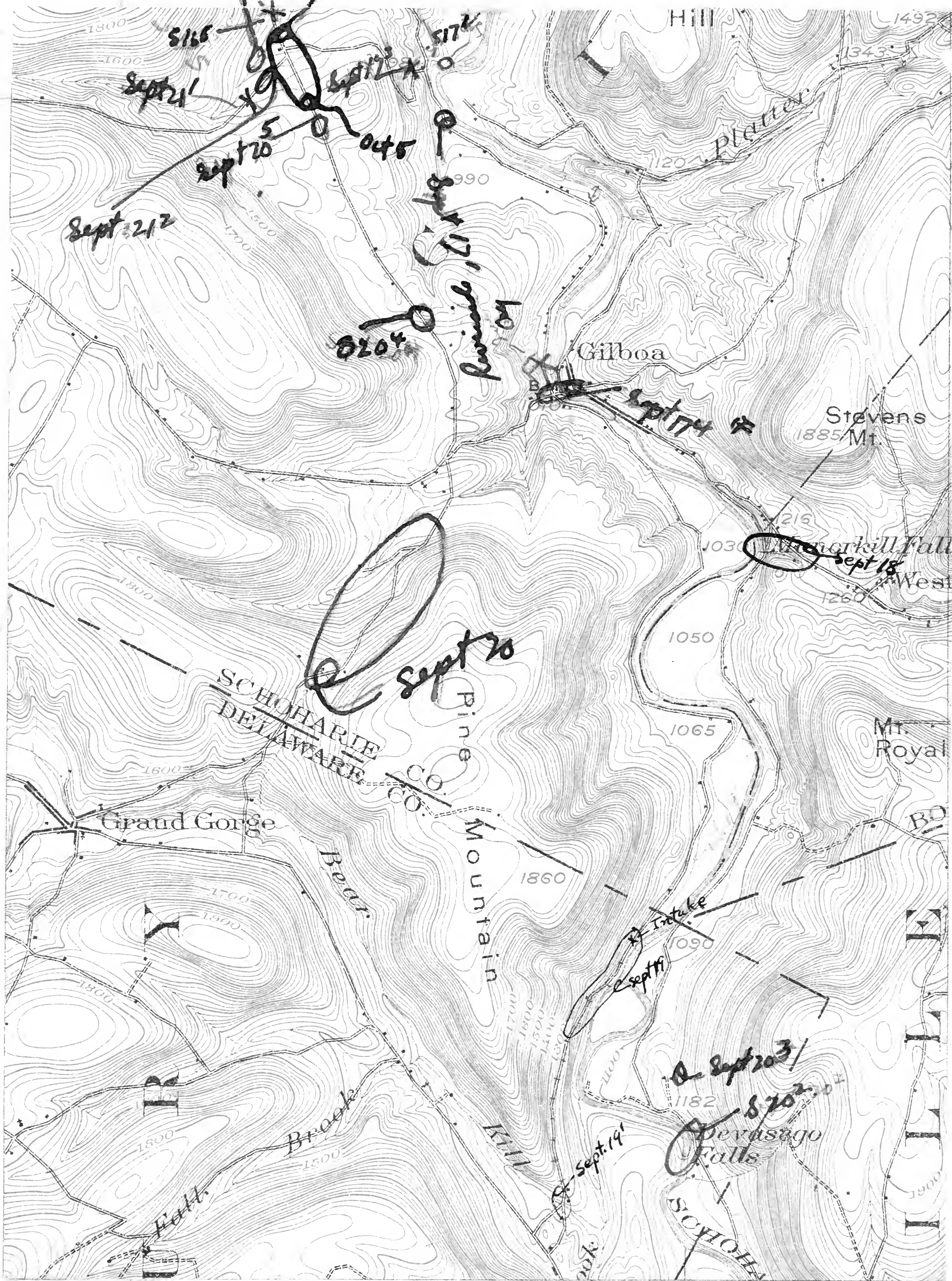
Relief is shown by contour lines in brown, which on some maps are supplemented by shading showing the effect of light thrown from the northwest across the area represented, for the purpose of giving the appearance of relief and thus aiding in the interpretation of the contour lines. A contour line represents an imaginary line on the ground (a contour) every part of which is at the same altitude above sea level. Such a line could be drawn at any altitude, but in practice only the contours at certain regular intervals of altitude are shown. The line of the seacoast itself is a contour, the datum or zero of altitude being mean sea level. The 20-foot contour would be the shore line if the sea should rise 20 feet. Contour lines show the shape of the hills, mountains, and valleys, as well as the altitude. Successive contour lines that are far apart on the map indicate a gentle slope; lines that are close together indicate a steep slope; and lines that run together indicate a cliff.

The manner in which contour lines express altitude, form, and grade is shown in the figure below.

1368a



1369



This is a detailed topographic map of a mountainous region, likely in the Adirondacks. The map features numerous contour lines indicating elevation, with peaks reaching over 3000 feet. Key locations include Conesville Manor, Conesville, and Kiu. The map also shows a network of roads and a railway line. The title "CONESVILLE" is prominently displayed in the center.

This is a topographic map of the Schenectady, New York area, featuring contour lines and various geographical features. The map is heavily annotated with handwritten notes and symbols.

Geographical Features and Locations:

- Gilboa:** A town located in the upper center of the map.
- Stevens Mt. (1885):** A mountain peak located to the east of Gilboa.
- Manors:** A small settlement located south of Stevens Mt.
- Pine Mountain:** A large mountain peak located in the center of the map.
- Devils Falls:** A waterfall located in the lower right quadrant of the map.
- Grand Gorge:** A gorge located in the lower left quadrant of the map.
- Schenectady:** The name of the county is written across the map.
- Hill:** A hill located in the upper right corner of the map.
- Platter:** A feature located near the top right of the map.
- Brook:** A stream located in the lower left quadrant of the map.
- Brook:** A stream located in the lower center of the map.
- Brook:** A stream located in the lower right quadrant of the map.

Handwritten Annotations:

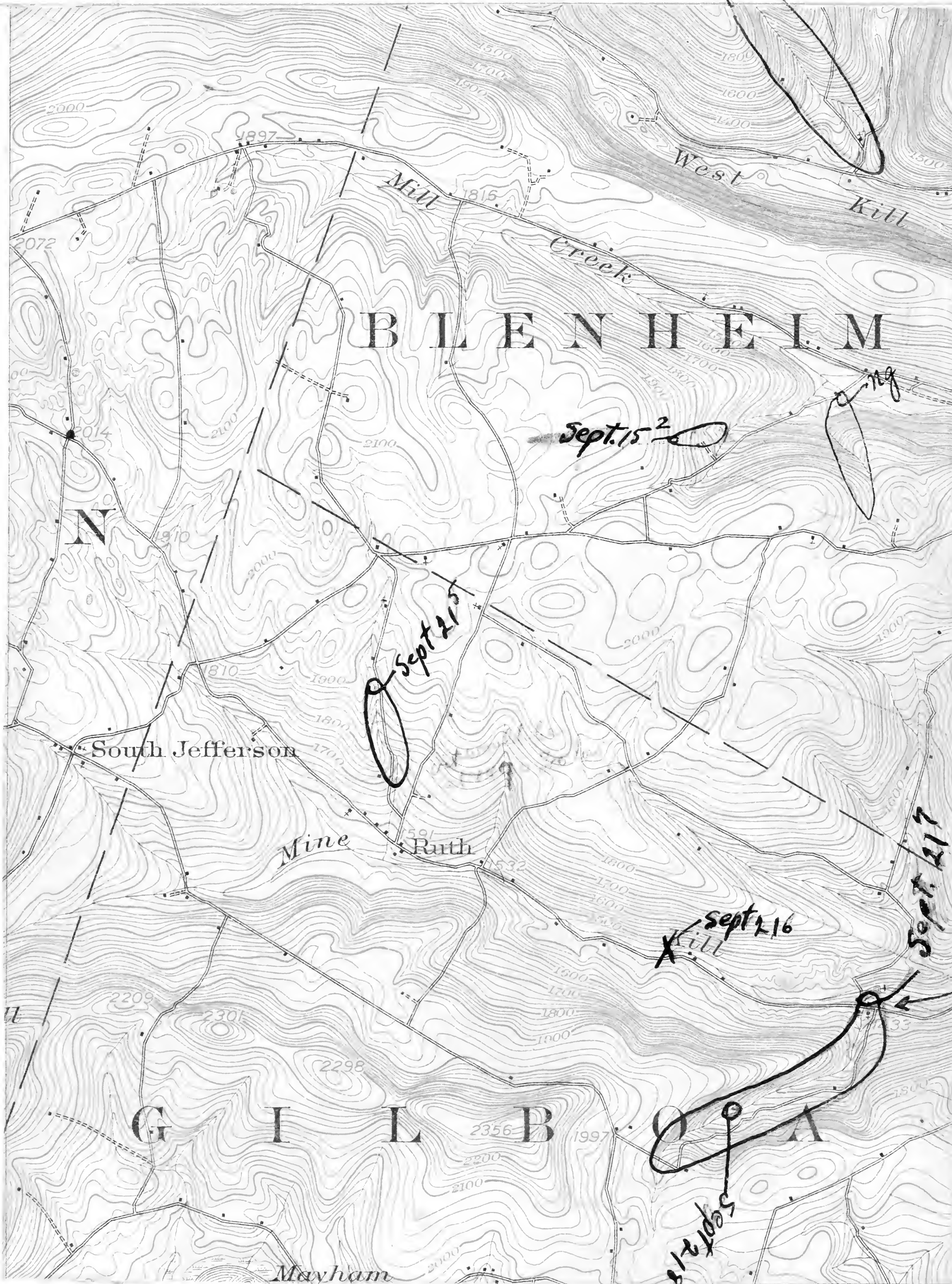
- Hill:** Written in the upper right corner.
- Platter:** Written near the top right.
- Schenectady:** Written vertically in the upper left.
- Pine Mountain:** Written vertically in the center.
- Devils Falls:** Written near the bottom right.
- Hill:** Written vertically on the right edge.
- Brook:** Written near the bottom left.
- Brook:** Written near the bottom center.
- Brook:** Written near the bottom right.

Other Features:

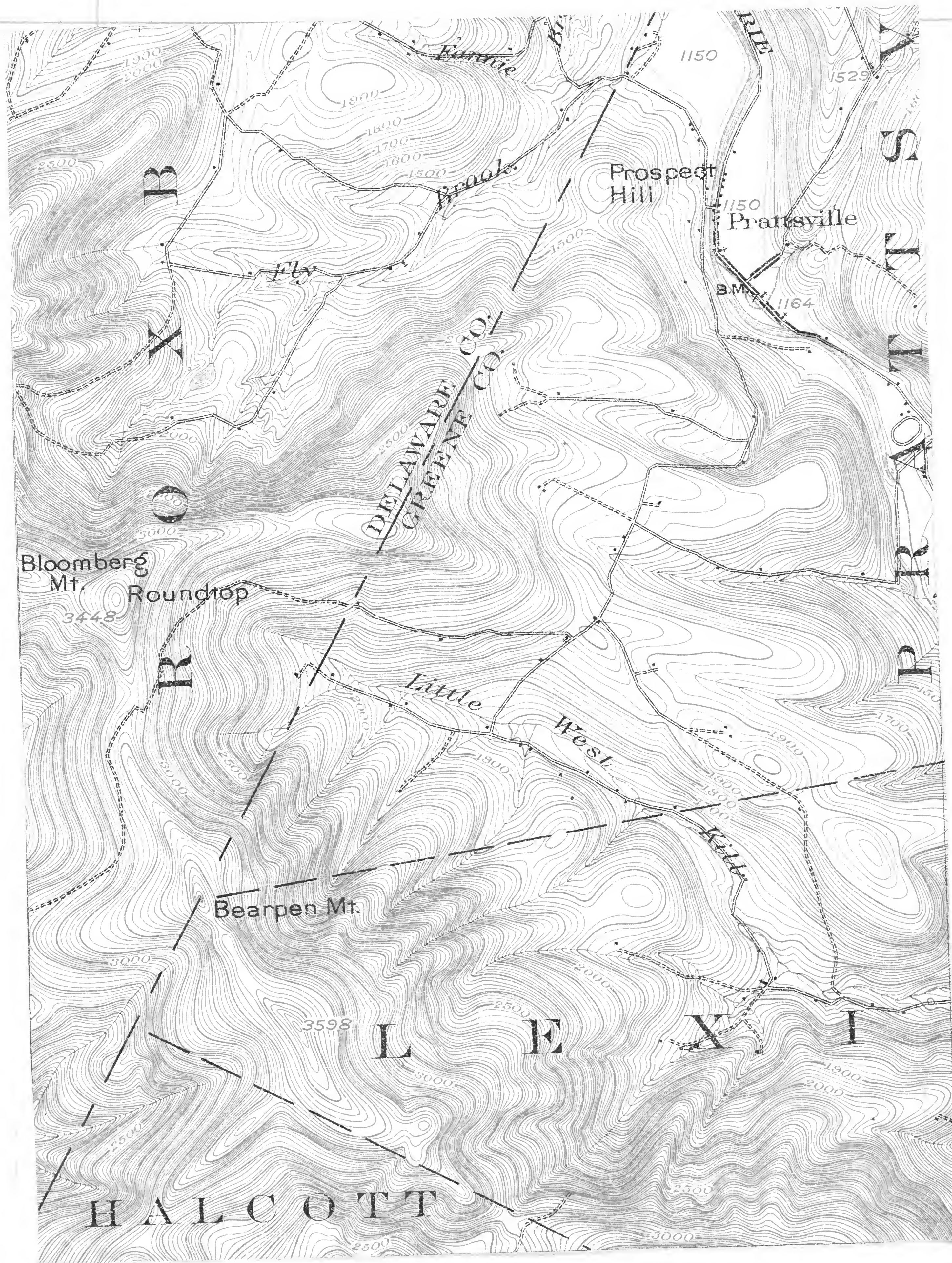
- Contour Lines:** Representing elevation, with labels such as 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400, 2500, 2600, 2700, 2800, 2900, 3000, 3100, 3200, 3300, 3400, 3500, 3600, 3700, 3800, 3900, 4000, 4100, 4200, 4300, 4400, 4500, 4600, 4700, 4800, 4900, 5000, 5100, 5200, 5300, 5400, 5500, 5600, 5700, 5800, 5900, 6000, 6100, 6200, 6300, 6400, 6500, 6600, 6700, 6800, 6900, 7000, 7100, 7200, 7300, 7400, 7500, 7600, 7700, 7800, 7900, 8000, 8100, 8200, 8300, 8400, 8500, 8600, 8700, 8800, 8900, 9000, 9100, 9200, 9300, 9400, 9500, 9600, 9700, 9800, 9900, 10000.
- Roads:** Represented by lines with cross-ticks.
- Water:** Represented by blue areas.
- Settlements:** Represented by small black dots.

Sept 24
my

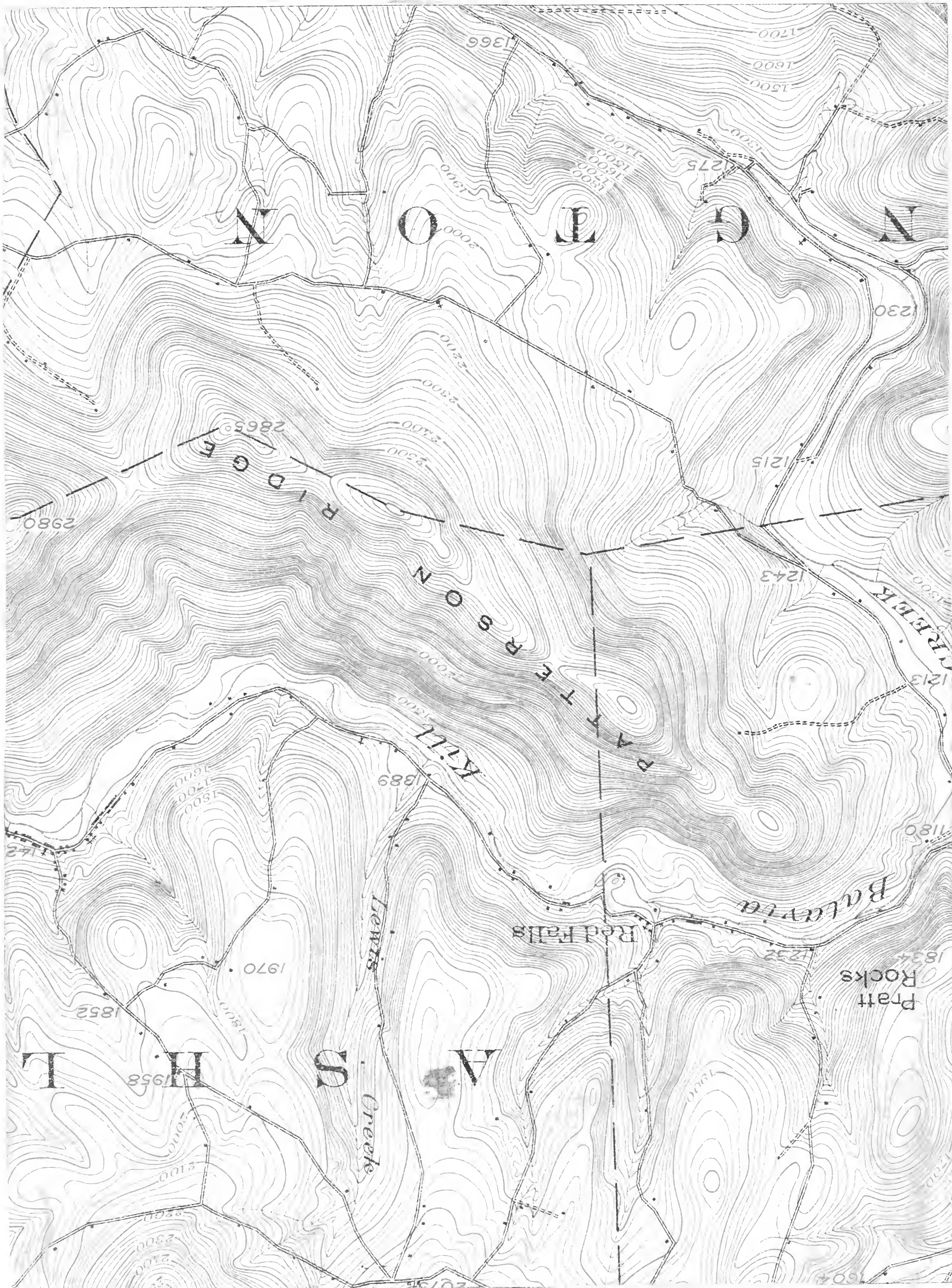
1370a



1371



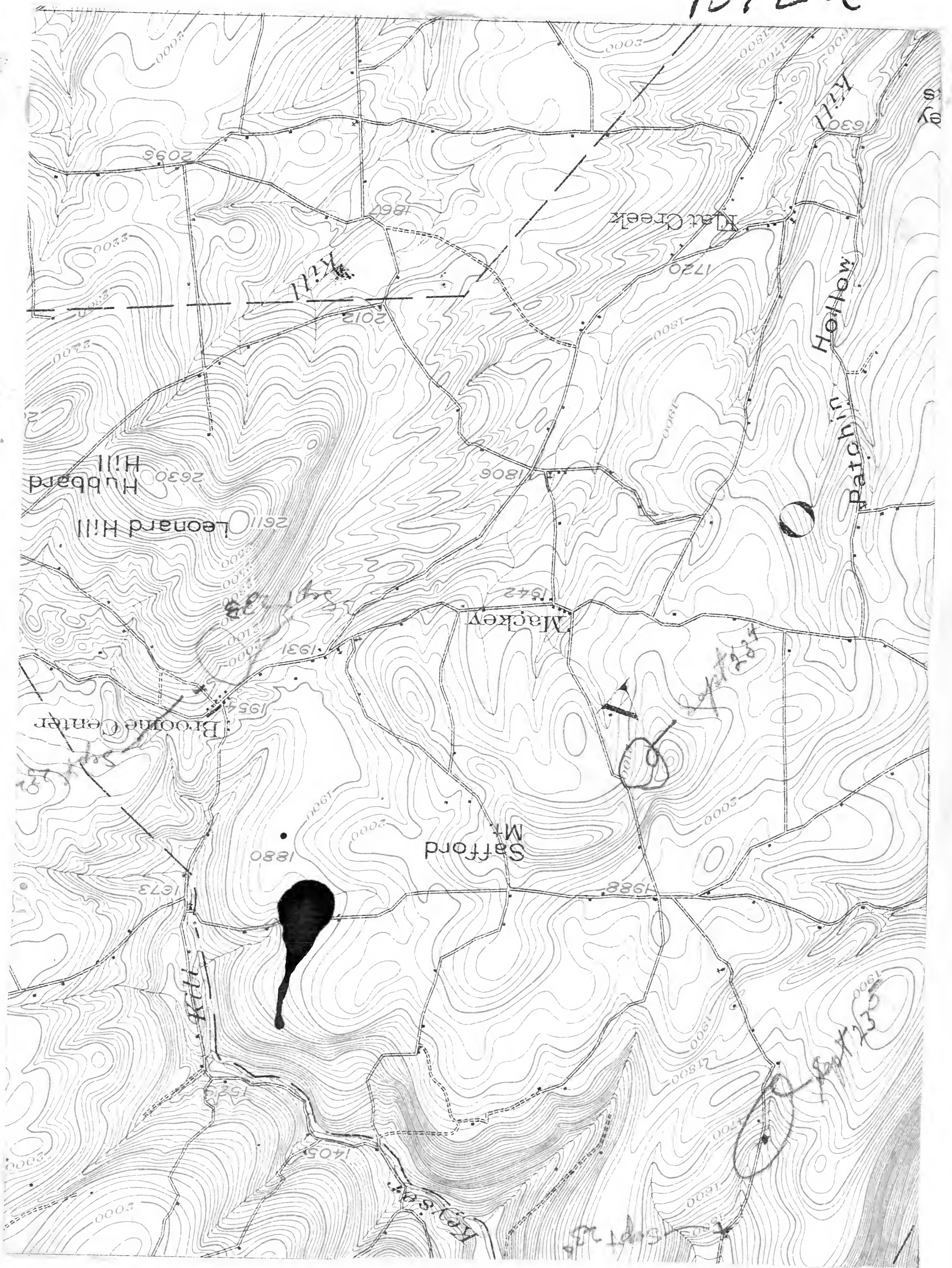
1371a



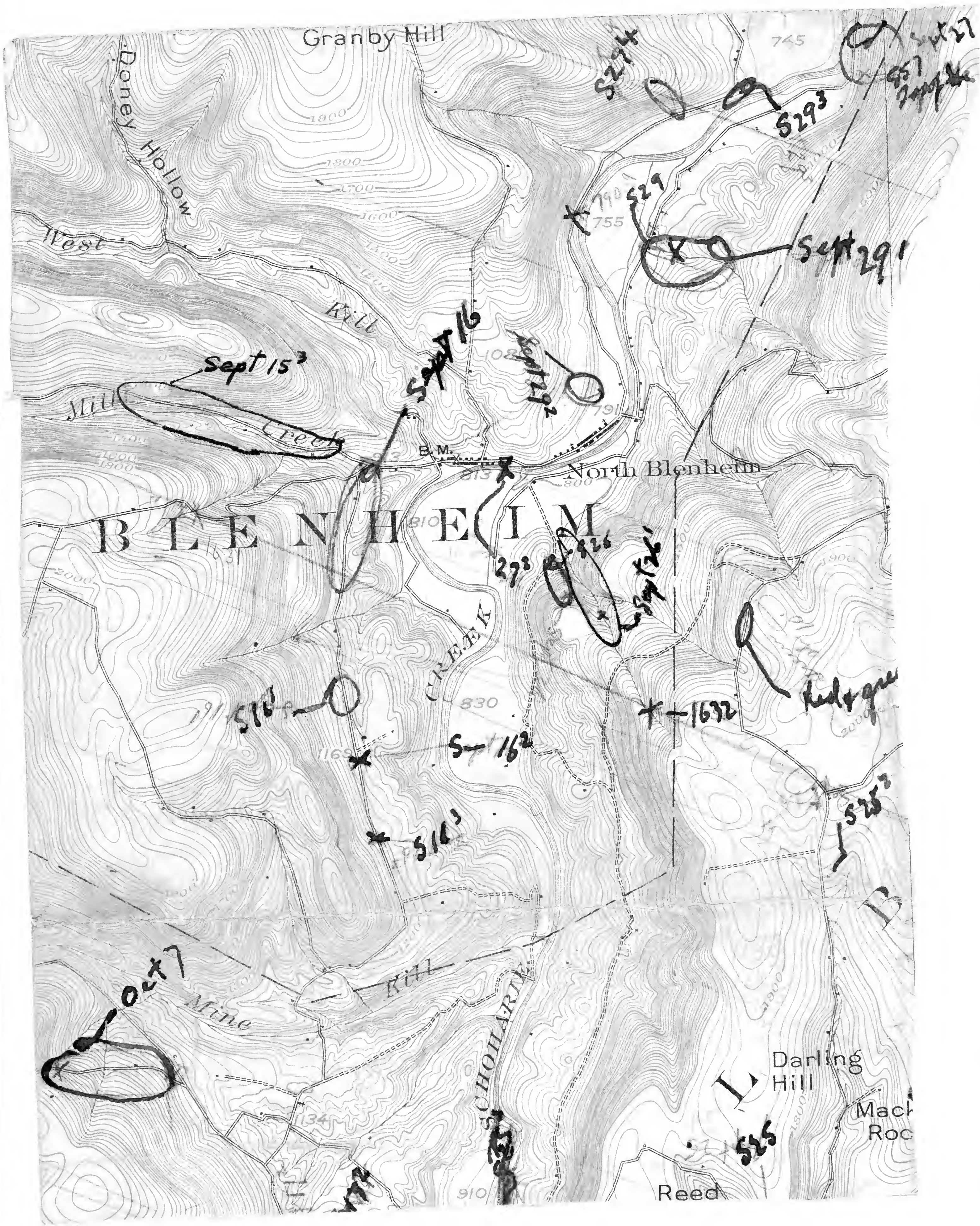
SECRET



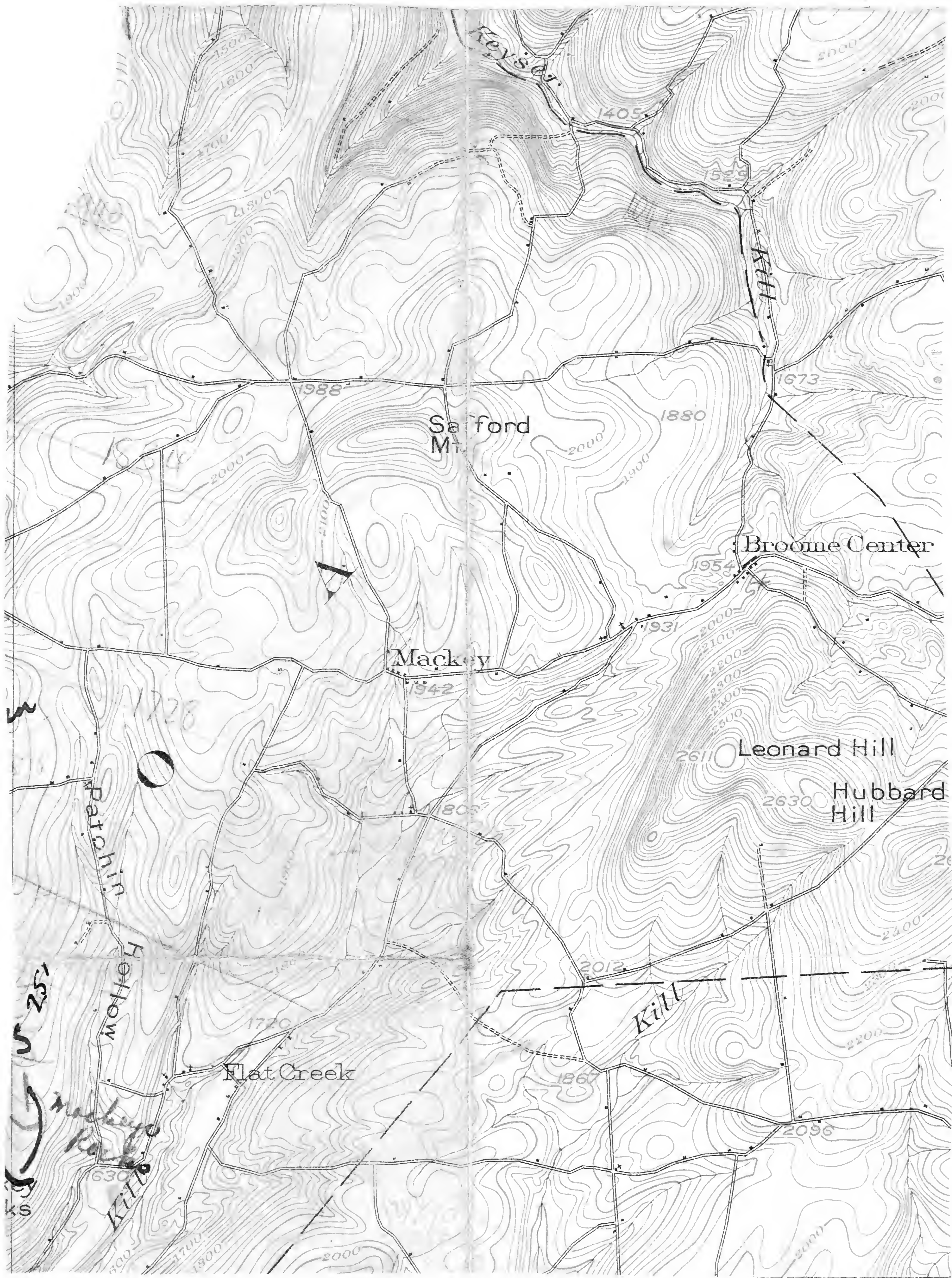
1372a



13726

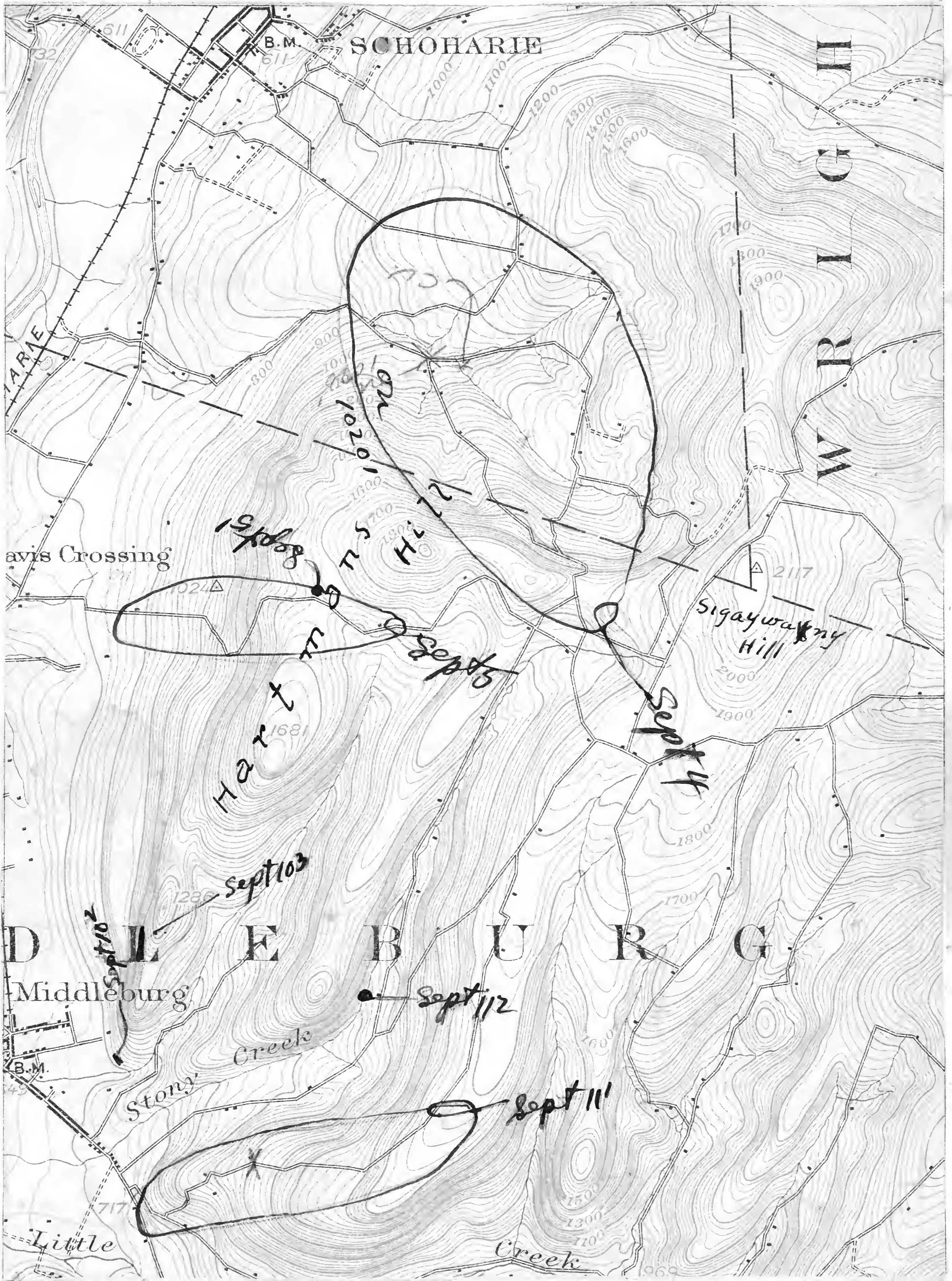


1372c



3

1373



9

337
pages

1373 a

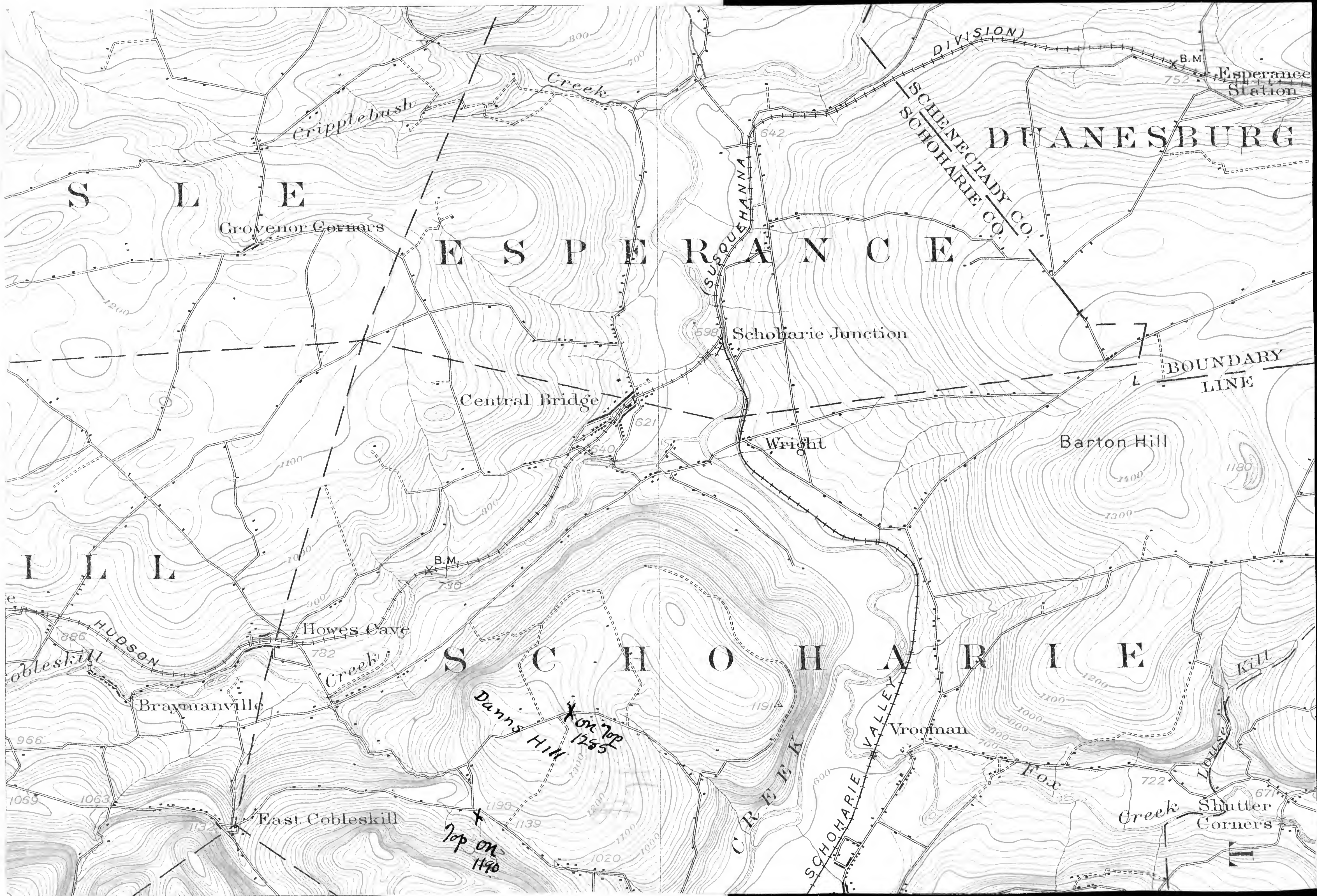
The United States Geological Survey is making a topographic map of the United States. This work has been in progress since 1882, and more than 38 per cent of the area of the country, excluding outlying possessions, has now been mapped. Areas mapped are widely distributed, every State being represented, as shown on the progress maps accompanying each annual report of the Director.

This atlas is being published in sheets of convenient size, 16 1/2 by 20 inches. The four-sided area of land represented on an atlas sheet is bounded by parallels and meridians. It is called a *quadrangle*. The quadrangles mapped cover 1° of latitude by 1° of longitude, 30' of latitude by 30' of longitude, 15' of latitude by 15' of longitude, or smaller areas, size of the area mapped depending on the scale used. Small scales are employed. The smallest scale, that used for quadrangles covering 1°, is 1:250,000, or very nearly 4 miles to an inch—that is, 4 linear miles on the ground is represented by 1 linear inch on the map. This scale is used for maps of the desert regions and some other parts of the far West. For the greater part of the country, which is mapped in quadrangles covering 30', a larger scale, 1:125,000, or about 2 miles to an inch, is employed. A still larger scale, 1:62,500, or about a mile to an inch, is used for quadrangles covering 15', the unit selected for mapping thickly settled or agriculturally important areas. A fourth scale, 1:31,250, or one-half mile to an inch, is employed for maps that are to be used

THE TOPO

75
1373 a

1373 a
1373 a
1373 a

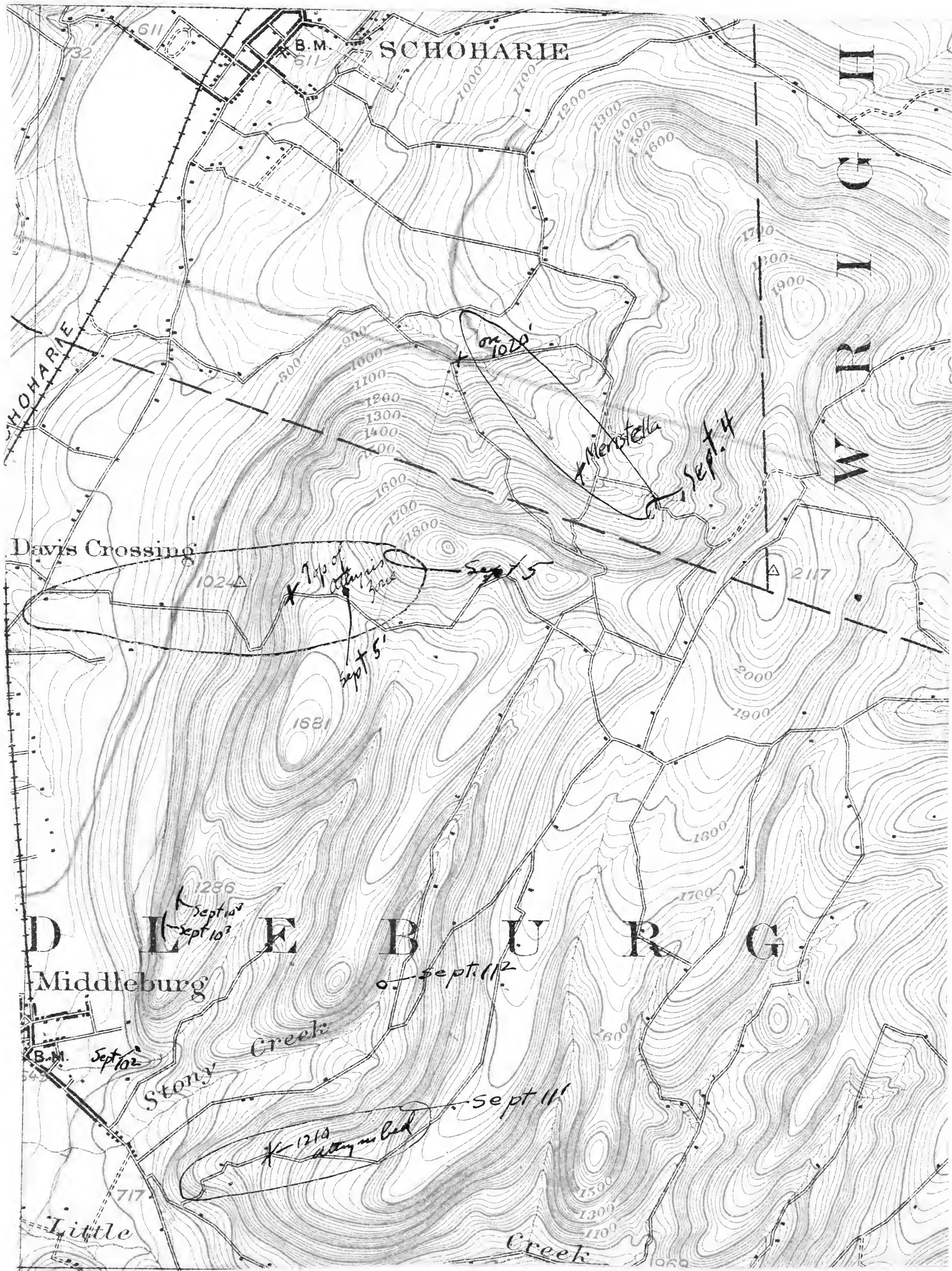


1373a

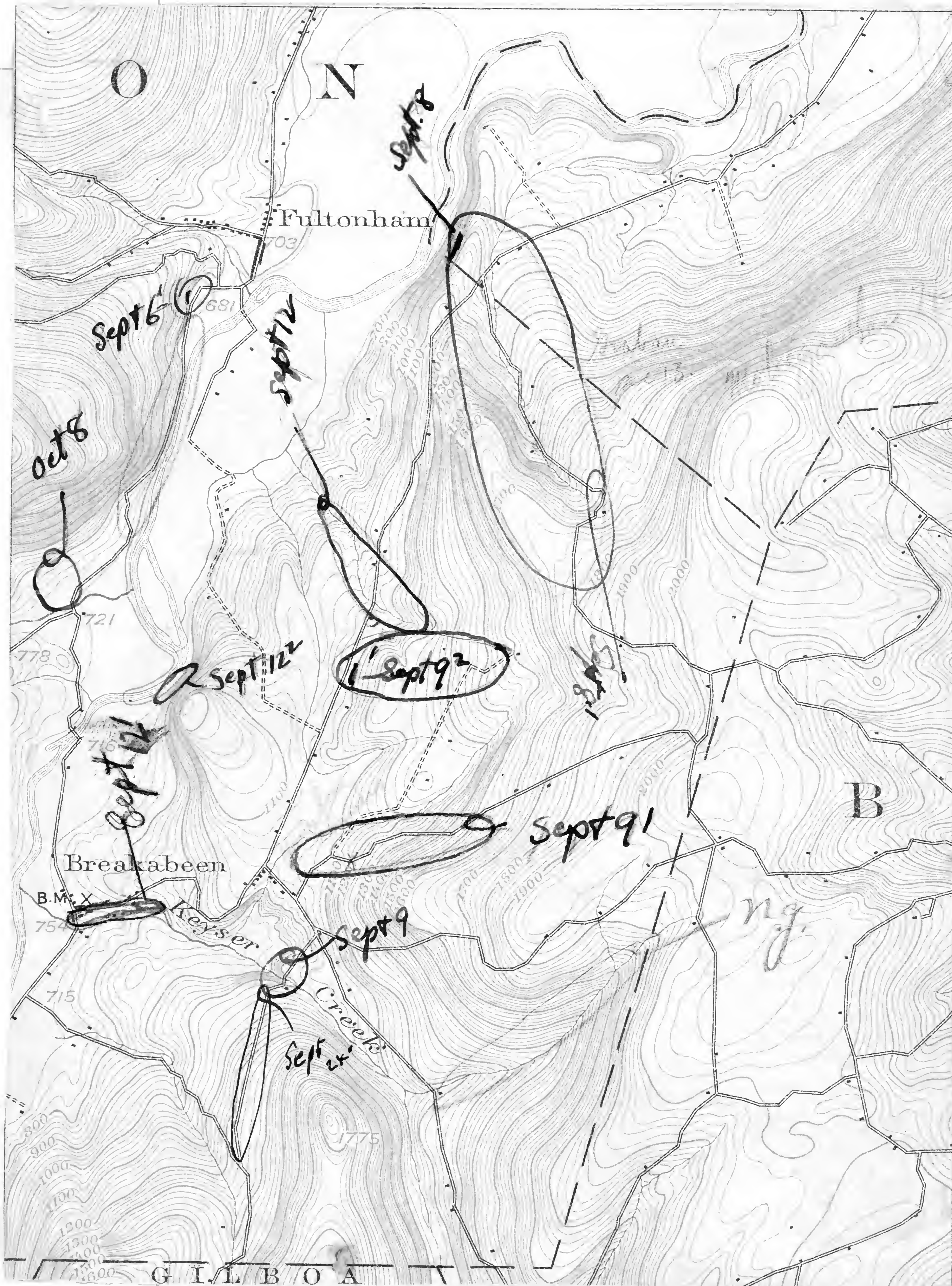
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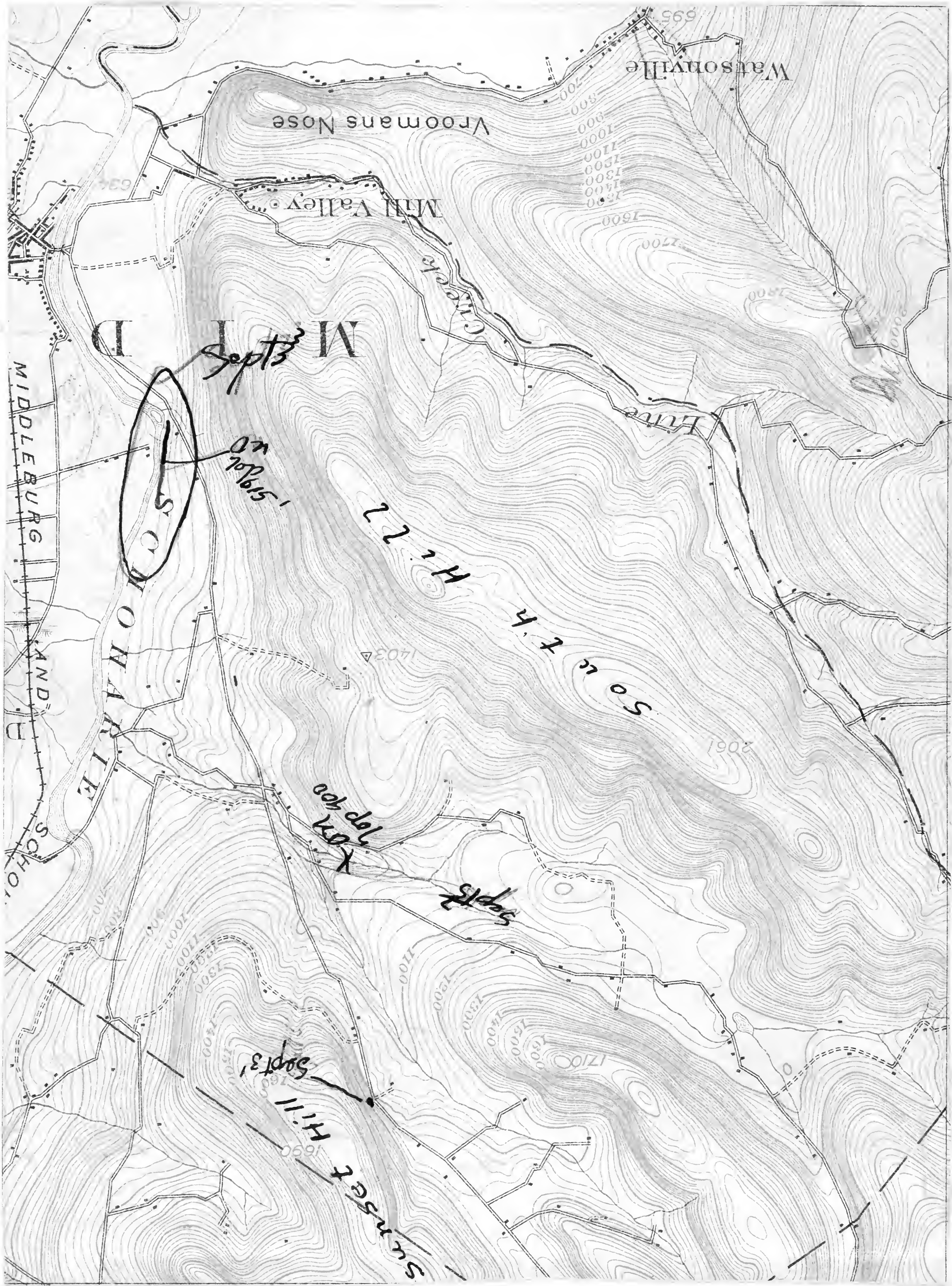
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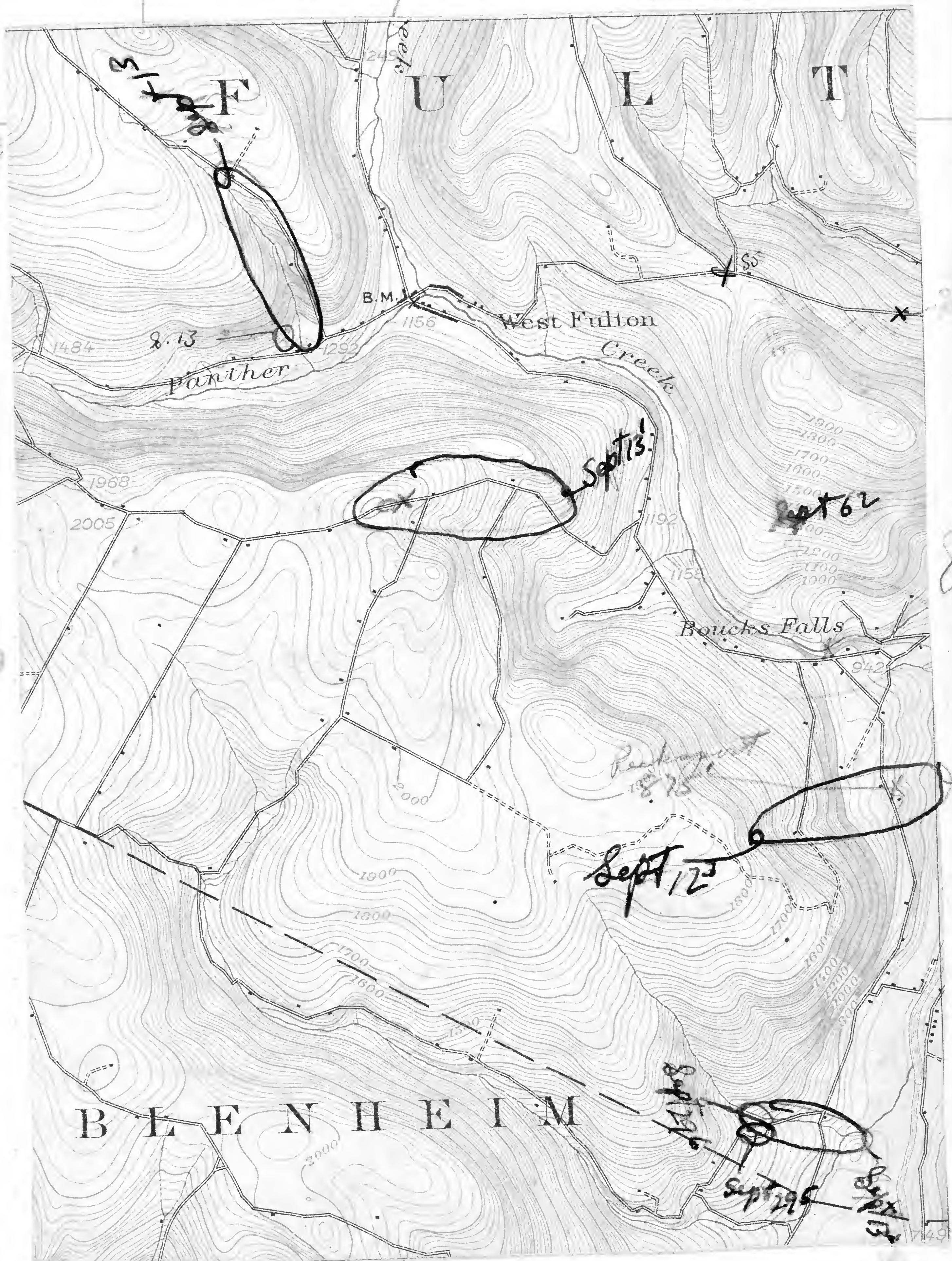
1374



1374a

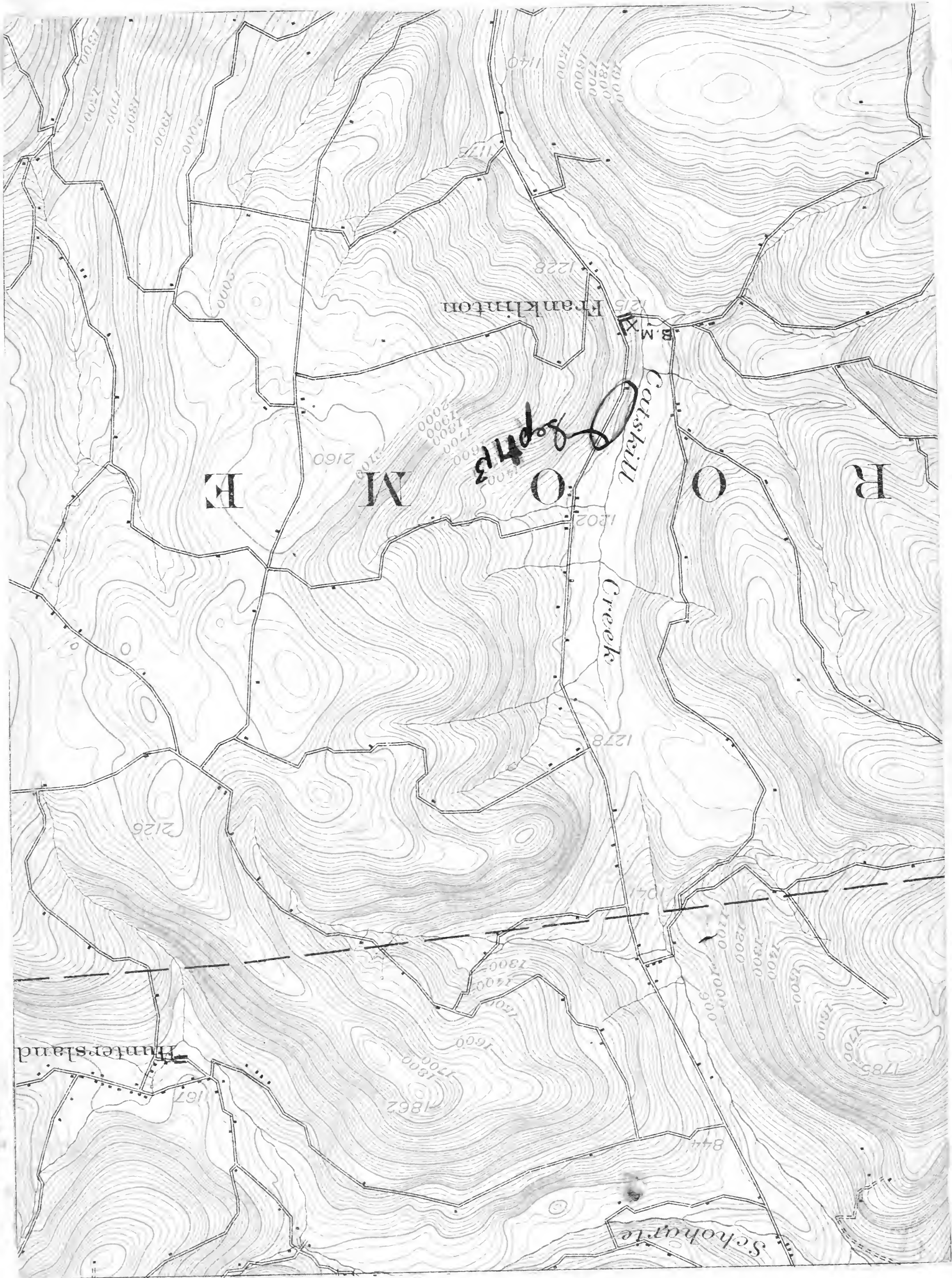


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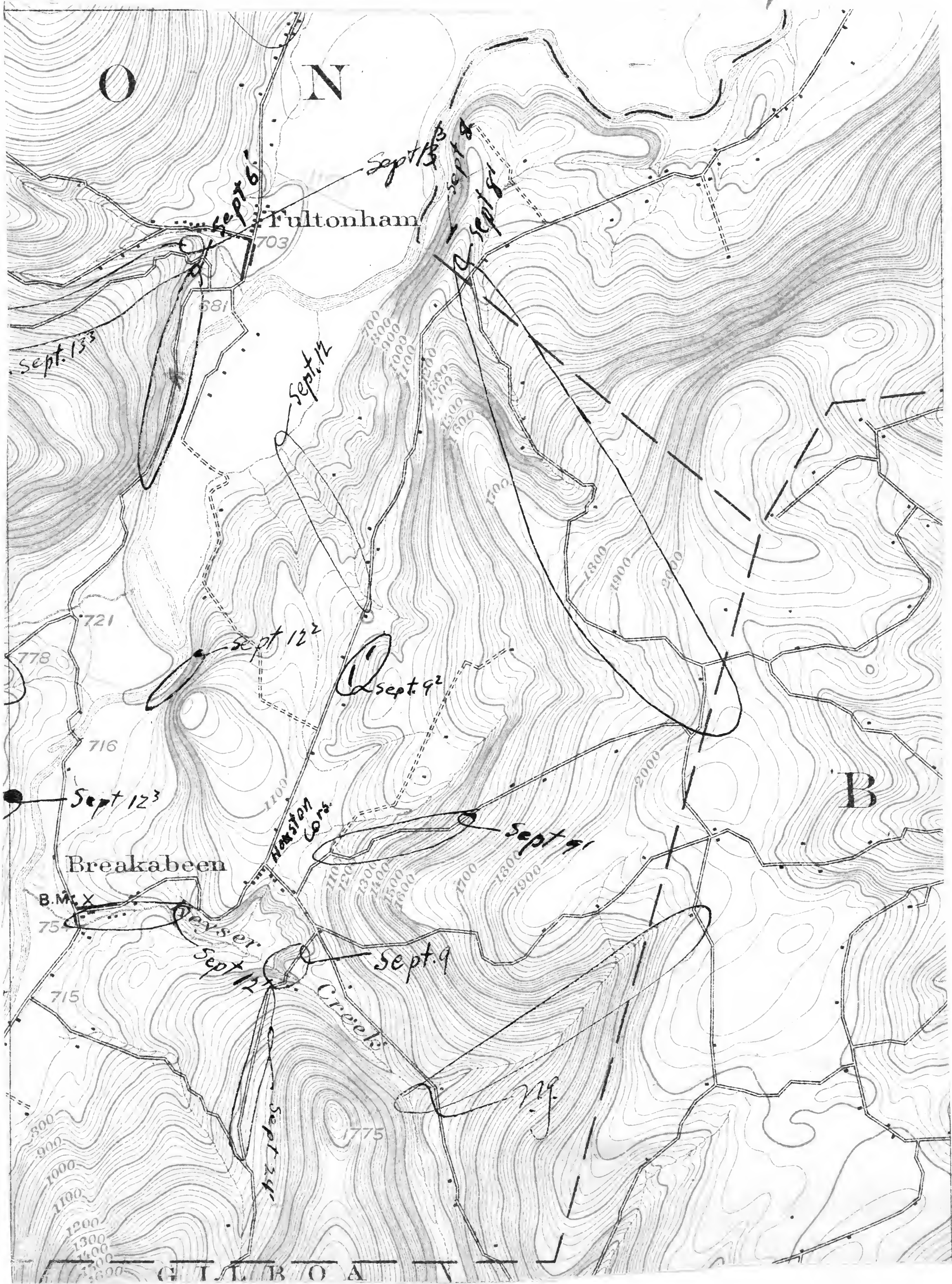
1375
B72

1375a

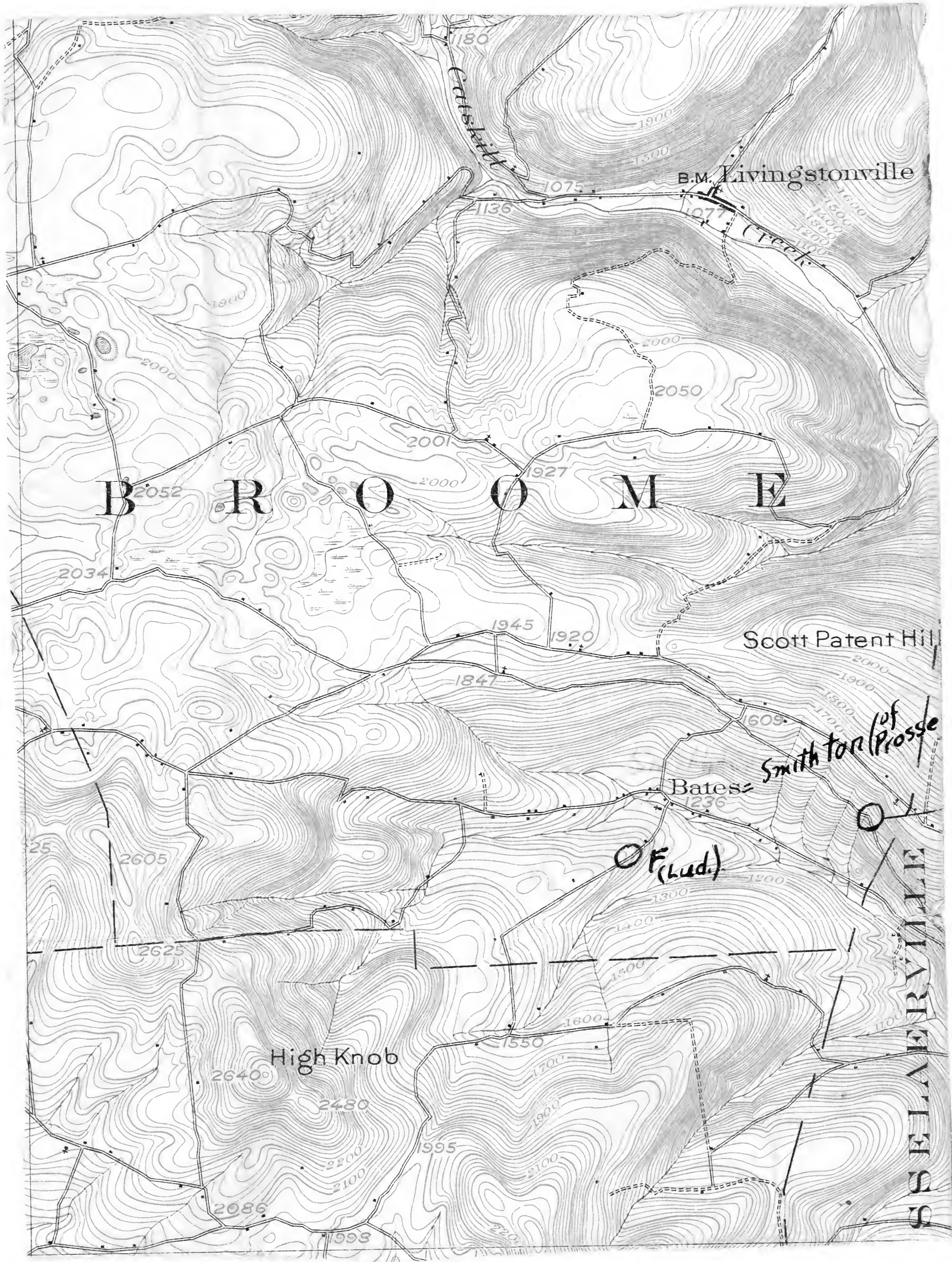


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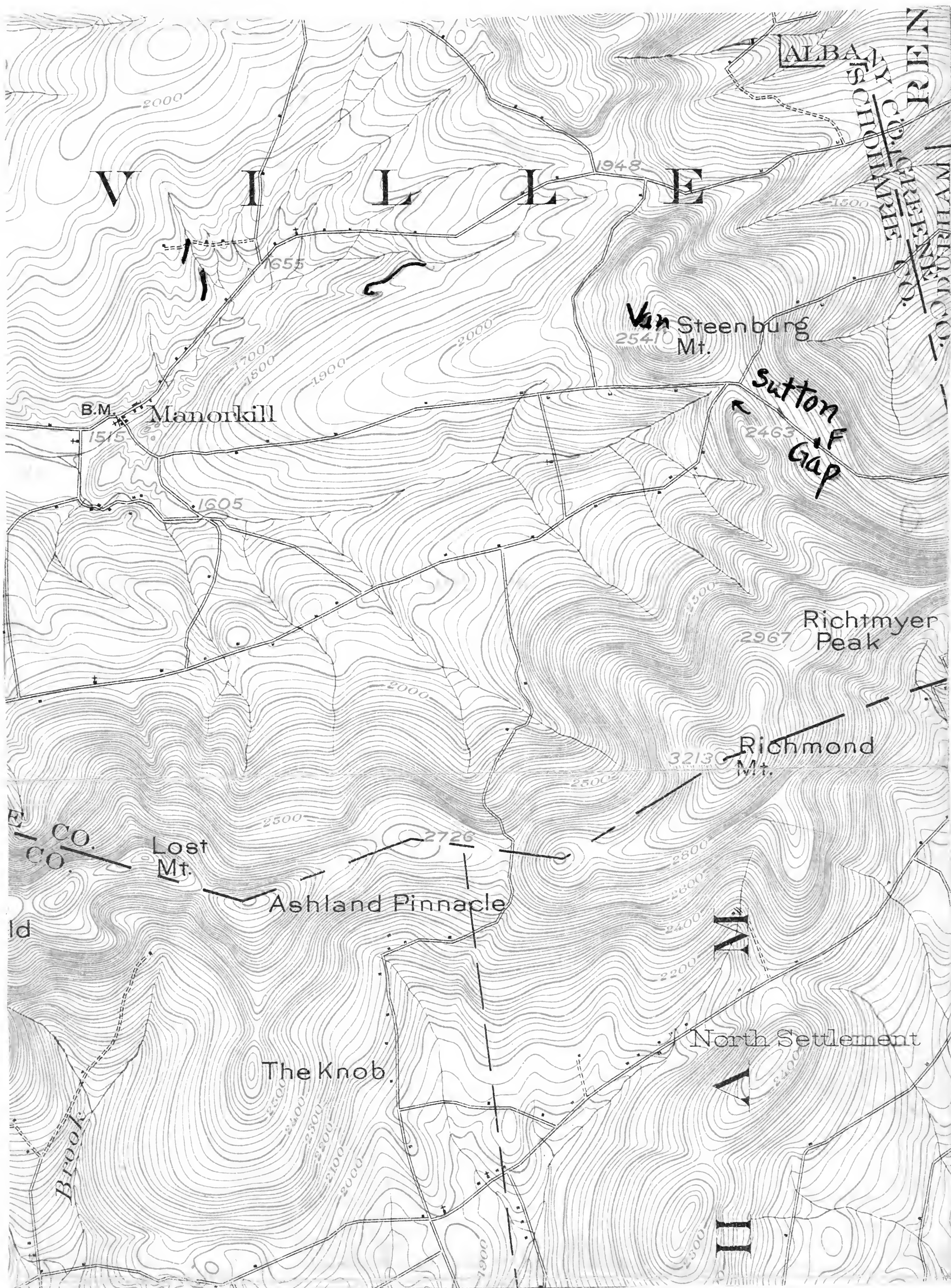
1375 f



1375 C



1375e



146

Sept 3 Schoharie
Onondaga (Top) in 1376 at
12 1/2 below road intersection &
337 paces east of same. By hand-
level I make the top 1285'.

Sept 3¹ - 70' cut in blocky, dark
shale of the lower Bridgewater
Rock weathers to a red brown
rusty color.

260 paces
Strike N 74 W 40° 260 paces
Sept 3² - at 260 paces
what is close to top of Onondaga
from stream & road
This would put top of Onondaga
at 900'

From road to Middleburg on
W side Valley a ridge of dark
hard rocks can be seen
descending in the ridge from
Schoharie to Middleburg.
Measured by the barometer; it
descends 20'.

Sept 3³ - Onondaga exposed in
Schoharie Creek 75 paces N of
small side stream which crosses
road. Paces measured on road.
The limestone is exposed in
the creek bottom for 5-35
paces downstream from the
top.

September 4 - 1377 / 47

At cross-roads and in bed of small stream below bridge at 1020' is the top of the Onondaga

Section up side gully. Hand-levelling begun at 1050' = 1090 by

0-2 - covered Barometer

2-3 - Lower 1 1/2' of step. Lowest

6" black calcareous shale. Next

1' - 1 1/2' is a heavy bed of ls,

nearly black & fine-grained

Upper surface is black limy

shale. Sections of snails /

and small brachiopods are

abundant. I saw no Protokion

Rest covered

3-4 - covered

4-5 - black calcareous sh -

weathering ash-color - 3' above

bottom of step is 3" ls with

P. discolorum. At top of this

interval is a bed of ls. about

8" thick, black smooth-grained,

subconchoidal fracture. The lower

two inches is very shaly. This

ls. like that below shows

many sections of snails, also

the bank above the ls. are

shales that weather to an

ash-color. They are quite sandy

I saw no fossils in them.

5-6 covered (except for 3' grey sh above ls)

6-7 near bottom of step

about 1' of black slaty shale

Near the bottom of this part

is one

Mill

40'

10' - 15' - fossils abundant

black sh.

20' alt. most ss. + sh.

Dark arenaceous crumbly shale

115'

ls 9"

Scale sh.

9' covered

20" ls calc. sh. 6-9"

70'?

covered

onion.

1020

I believe that the ash
colored rock belongs to the Cherry
Valley and probably the interval
2-5 belongs to the CV! 1378 148

7-10 - covered. at top of 10 in
~~bank~~ left bank comes
about 30' of block shale with
a brownish white streak. This
shale rusts very red-brown
but breaks into lumps rather
than the typical chips. It is
clearly a passage of the
fossil Chittenango into blocky
Chittenango. These shales
do not have the characteristic
brown-greasy streak but one
which is nearly white. Besides
this the shales are very sandy.
Actually some of the chips
have the characteristic lower
Bridgewater grey-brown
weathering color.

10-20 - nearly continuous exposure
in banks & bed of stream. All
the rock I have seen gives
a decidedly white streak
is of the lower Bridgewater
or Cardiff facies. The patch
of rock at 6-7 is the nearest
I have seen to true
Chittenango

20-27 - same

27-28 - between 27 & 28 the
rock has a very strong dip
about 21° SW. Here also
was seen

micaceous ss. This is 1379/49.
probably a fallen block, because
at 28-29 the rocks have their
normal attitude. 2' below top
of 29 is a 5" layer of calcareous
and very coarse ss.

29-30 - Mostly fine shale
alternating with thin beds of
ss.

30-31 - fine shale alternating
with thin ss. beds. saw no
fossils.

31-32 - same ss-sh alternations

32-36 - beautiful exposures in
the stream bed. Shales all
of Cardiff aspect. At 35-36 I
saw a small *Parenchona*. The
shales here are very sandy &
crumbly. I can hardly
distinguish them from those
below.

36-38 - same

38-39 - 5' falls.

39-40 - same

40 - At base of 40-41
come abundant fossils in
the shales.

<i>Camarotoechia</i>	<i>L. pap. lypa</i>
<i>Schuchertella</i>	<i>Therapsella</i> ?
<i>A. cosa</i>	<i>Leiorhynchus</i>
<i>C. vicinus</i>	<i>Sys. suberosatus</i>
<i>C. bellistata</i>	Corals
<i>L. andalusia</i>	<i>Pensatella</i>
<i>Microcyclus</i> ?	

This is all in a soft 138050
crumbly arenaceous sh.

Above top of 40 there are
about 40' of these rocks.

41-42 + 2' At top of 42 is
ss. with large *Spinifer* and
Meristella. These beds are
below the site of what must
have been old mill. In the
upper beds the common fossils
are *Meristella*, *S. andersoni*,
A. cora, *Circinus*, *Leiorhynchus*.
This locality is 100 paces
downstream from the road

September 5.

151
1381

Hartmans Hill -

Exposure in Onondaga 720'
Covered to 1050' - Hole comes
20' of fine arenaceous shales
with *Strophomena* & *Leiorhynchus*
1180 - fine arenaceous shales
of lower Bridgewater. This
runs for 30'. Then comes
heavier argillaceous ss. with
abundant *Leiorhynchus* passing
up into 12' of heavy bedded
coarse ss. without fossils. The
next 10' are covered. Then follows
8' of lumpy argillaceous shales
followed by 11 feet of
alternating argillaceous sh.
ss. At the bottom of which we
saw *Phacelasma*. This is at
1240'. For 30' the rock is crumbly
arenaceous shale with interbedded
ss. At 1270' the lithology changes to
a very lumpy arenaceous sandstone
or lumpy ss. At 1270 occurs
C. vesicularis & *Leopidoleptus*. In the
lower 10' there occurs also
large sp. granular? This
lumpy rock runs up to 1305'
where it is rather hard &
massive. Just above 1305
the lithology changes to a
massive argillaceous ss.
having a highly fractured
surface.

Top of Onondaga
estimated at 820'

common -

<i>P. livata</i>	<i>C. coronatus</i>	152
<i>Productella</i>	<i>Schuchertella</i>	1382
<i>S. granulosa</i>	<i>C. coronatus</i>	
<i>M. concentrica</i>	<i>D. debayi</i>	
<i>C. knisteri</i> ?		

This fossiliferous bed extends to 1330' after which the section is covered for 30'. The top of the bed is hard irregularly bedded ss. At 1360' comes very thin-bedded platy ss. which extends for 10'. At 1370' comes arenaceous sandstone with abundant fossils -

S. microphalus *M. corbuliformis*
Camarotoechia *C. mucronatus*
L. perplana *S. granulosa*
There are 5' of these rocks then 12' and covered. Then at 1385 comes more sandstone at 1390 *C. aff. coronatus* is very abundant. There are just 15' of these rocks as they go to 1400' *C. coronatus* is abundant all the way. Section is covered to 1415'. Here are

S. mucronatus *L. perplana*
C. aff. coronatus *P. livata*
At 1430 in the same sandstone rock comes -

P. livata (undoubted) *Taenium*
Rhipidomella *S. mucronatus*
C. coronatus

At 1440' the rocks are irregular bedded.

Corn. flabellus. This rock 153
runs up to 1450' and 1383
saw in it G. elongata,
G. erectum, besides the
Corn. flabellus. At the top it
is coarse irregularly bedded
ss. much like the Upper
Delphi.

1450' - 1472 covered

At 1472' comes crumbly arenaceous
shale. We saw one P. lirata.
There are 10' of these rocks and
think this is the soft
shale at the base of the
Stegins zone to Solville sequence.

These rocks extend up to
1500' where there is a ledge
of ss 2' thick containing
fragmented large Spirifer.
Below this the softer shales
alternate with thin beds of
ss. At 1508 comes a 5' ledge
of blue arenaceous shales
with Paracyclus lirata a

Sept 5' - thin argillaceous
having a shaly fracture
S. mucronatus/rare.

Sept 4 - revisited - road
bridge is at 1090' not 1030'
as the map has it. The cut
in the bank at Hk. 10 actually
has a mixture of both

at 1485 in the shale
occurred Leptogynis

1485
1490
1495

37

Corn. flabellus. This rock 153
runs up to 1450' and 1383
saw in it G. elongata,
G. erectum, besides the
Corn. flabellus. At the top it
is coarse irregularly bedded
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1450' - 1472' covered

At 1472' comes crumbly arenaceous
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Sept 5' - thin argillaceous
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S. mucronatus/rare.

Sept 4 - revisited - road
bridge is at 1090' not 1030'
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in the bank at Hk. 10 actually
has a mixture of both

at 1485 in the shale
occurred Leptogynis

1090
1030
1000

37

788

832

832

832

September 6.

155

Unknown as Nose - Went up to the
along N face of hill opposite
Mill Valley. **1385**

in ditch along the road.
For 100' vertically along the
path, fine, highly argillaceous
shales of Cardiff
series. This extent to 782'. The
rest was then covered to 832'
where 6' of argillaceous ss.
like in texture, shale as opposed.
832- These rocks extend to 845' in the
middle.

L. bryozoa
at 835.

Walked over hill to NE face
where we went down to an
elevation of 835'. At this elevation
come crumbly, argillaceous ss.
that weather like shales.

835-888 - same: at 888 the
rock breaks into large
irregular fragments not
small lumps. Here were
seen *L. bryozoa* & a fragment
of a large *Spinifer*.

888-893 - same rock with
Large *Spinifer granulosa*.
P. bryozoa is abundant.

893-912 - similar rock with
L. granulosa, *L. macroptera*,
C. cora, *C. aff. coronata*.

912-930 - coarse argillaceous
ss. breaking into heavy
plates - fossils common.
L. granulosa a large size.

Spinifer all
these rocks

Fossils seen lower in slope:

L. macroptera

Hydroid corals, *N. arguta*, 157
L. penultima, *C. aff. coronata*,
930-950 Sand. At 950-960
arenaceous sh. breaking into platy
chips.

960-975 - gray irregularly bedded
argillaceous ss. with *R. cosa*,
S. granulosa, *N. arguta*, *R. stolonifera*,
C. aff. coronata, *S. mucronatus*
At 1002' comes heavy-bedded
conchoidal fracturing ss. succeed-
ed by dark arenaceous argill.
shales. The ss. are sparsely
fossiliferous. The dark arenaceous
shale goes up for 10' then come
the same irregular ss. as below
with *N. arguta*, *C. aff. coronata*.

A. corona

1012-1045 The rock has become
heavy-bedded subcalcareous
ss. but is succeeded by
argillaceous ss. like the ones
so common below. These ss
go to 1052 then come
flaky shales interbedded
with ss. and which grade
upward to ss.

1052-1122 - The shale alternating
with ss. is capped by cross-
bedded ss. Then comes more
arenaceous shales with
interbedded ss. grading up
into ss. At 1122 were seen
Spirifer, *P. linearis*, and
C. coronata.

P. linearis and *S. linearis*

up into uniform layers
which form the
ledge of the nose. These
upper layers have plant
impressions.

157

1387

At 990 (60' above the 930 foot
bed) we found *S. acuminatus*,
S. submarginatus, *C. off. coronatus*,
Camartoechia, *S. granulatus*.
1040 - irregularly bedded ss
with *Camartoechia* c, *M.*
concentrica. The hard ss go
to 1052 which I regard as the
top of the *Athyris* zone. Above
this in the dark shales we
saw:

C. mucronatus Large spines
P. lirata *M. subulata*
Small claws.

Sept 6' - heavy ss ledges beginning
at 715' or 25' above level of the
road. In loose pieces we saw
P. flabellum, *S. mucronatus*, *C.*
coronatus. In place we saw:
P. lirata, *E. itys*, *Comularia*,
Camartoechia, *S. mucronatus*
(*Athyris* zone type). This is
apparently the same ledge at
1052' of *Vermans Nose*. 0.15
miles farther south from bend
are ledges at the roadside of
hard, ~~massive~~ thick bedded
dirty ss. At an elevation of 702'
we saw plant fossils

S. mucronatus, *Gosaeletia* 158
triquetra, *S. granulatus*, *C. pelt.*
coronata, *A. cora*, *M. concinna*, etc.
at 720 - 725.

1388

Com. flabellus *C. vicinus*
N. arguta *O. parvula*
P. dentella *P. lirata*
Leiochynchus *S. mucronatus*
C. scitulus

740 - *Camarotoechia*, *Gosaeletia*,
M. mytiloides

Above 740' comes a thick succession
of dark blue-grey arenaceous
shales and interbedded ss. These
are the same as the similar
rocks above 1052 in Vroman's
Nose. We saw here *P. lirata*.

This section runs south along the
road for 0.55 mile. At end of
section comes rather heavy
ss. In a slab, not in place,
were seen *S. mucronatus* (wide)
C. coronatus, *H. varicosa*,
S. circularis. The latter is
definitely from this locality. The
former may not be. About
place however in the
arenaceous shales was a
Sp. mucronatus.

Sept 6th

Bonches Falls - At the falls there are about 80' of dark blue ¹³⁸⁹ arenaceous shales like those along the road out. The ^{supporting} ledge

of the falls is a hard storm-roller layer of 2-3' in thickness. The top of the falls was at 840. At 855' comes an 8' bed of ~~massive~~ massive, coarse-grained ss. Above are ss & sandy sh. A fallen block had *S. albata*?, exceedingly wide, short sp. *micronatus* with fine ribs. This is like the ones Miss S. had with *Schizophoria*. Don, however, Corn. flabellus + *S. granulatus*? At 859' we found abundance of *C. congregatus* + a specimen of *C. coronatus*.

Top of heavy ss bed is in a stream at 860'. At 862' comes about 10' of hard conglomeratic ss, limy and with fragmentary fossils. Quartz pebbles one-half inch in diameter. There is a black chert. Fossils in this bed are fragmentary - *S. acuminatus*?, *S. micronatus*.

At 870' in shaly ss. *S. albata* is abundant.

890 - a fall of 10' over a 3' bed of hard, massive ss. On this bed are *Receptaculum* *Margueta* *longa* *spinifera*.

Potter Hollow
Sherrywood
Report

At 900' comes a fall over 160
a 2' ledge of heavy ss. with
G. erectum; Spinifer (large)

1390

Sept 7. Mill Creek

N. Blunking section from level
of West Hill

0-1 lower 2 1/2' covered - Upper 3'
Coarse heavy bedded ss. plant
fragments

1-2 2' of coarse dark arenaceous
shale.

2-3 - heavy bedded ss.

3-4 - Dark sh 1', ss. 1' + heavy
bedded ss. 3'

4-5 - Light green, fine-grained
shales, crumbling to small
fragments 5 1/2'. These shales are
not very arenaceous.

5-6 - shaly ss. dark gray in
color.

6-7 - Top of fall in cross-
bedded ss. and great storm-roller

Sept 7' - 15' below bridge
crinoid stems ss. with
small Centronella of the
Ludlowville type. Above in
fine dark shales were seen

Beligodus a
Pol. constriata Potter Hollow
Gen.
T. carinatus

see p. 160a
storm-roller ss 5'

cross-bedded ss 8'

shaly ss 5 1/2'

light green ss 5 1/2'

ss 4'

heavy bedded ss 12 1/2'

ss 3'

Sept. 7 cont'd

Mill Creek. finish-

1391600

Hand-leveling from top of falls-

0-1 green ss. with storm-roller structure. completing storm-roller bed forming the main falls.

1-2 - Following this ss. are 6" of black sh. then about 1' of hard quartzitic ss in 2 beds the lowest 1-2", and the upper about 10". This ss. is followed by

2' of ~~black shale~~ green shale. Then comes a 1' ledge of ss. Above the 1' ledge are 11' of black sh.

Then come fossiliferous ss for 2' - *I. carinatus*, *C. coronatus*, *C. congregata*. This is followed by

5' of black sandy shale with *I. carinatus*. This capped by a ss layer 10" thick with

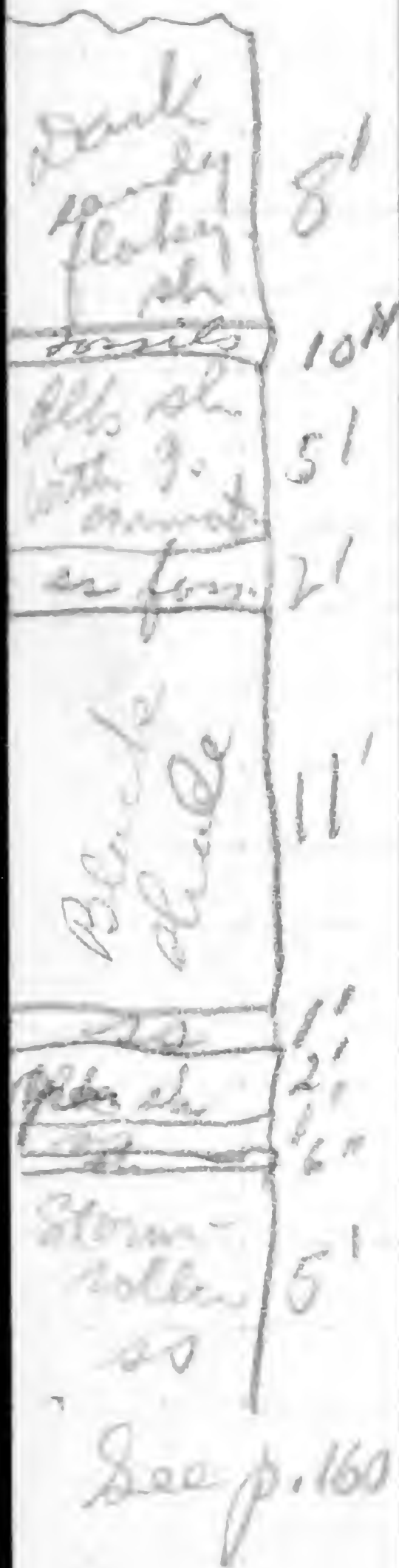
C. congregata & *I. carinatus*. Up-stream this bed lenses out and there are 13' of dark flaky shale

with thin discontinuous ss beds. This rock is very much like the Benwyn at the type locality.

Mottville spinifer was seen loose under the cliffs. Along the highway new road cuts show

the rocks above the storm-roller bed very well. In the black sh above the mud fossil bed

N. oblongus was seen.



Sept 8

1392/61

Ledge above Solohane spring
Bottom at 875'. In the bottom
of the ledge fossils are common
A. cora, *S. granuloseus*, *C. aff.*
coronata, *N. arguta*, See Prosser
in Grabau 1906, p. 265 (C²). The
rock is at the bottom lumpy
arenaceous mudstone and at
the top of the ledge it is
heavy massive arenaceous
mudstone. The top of this
ledge is in hard calcareous
rock much like the Solville
and the top comes at about 915'.
For 15-20' below 875 there were
finer arenaceous shales.
915-940 finer argillaceous ss.
breaking into thin plates and
with very few fossils. I believe
915 marks the top of the *Attheyia*
zone.

Sept 8' - Section along road &
stream - at 1092-1097' came
a ledge of argillaceous ss. breaking
like shale, dark grey. *P. brista*,
Camarotoechia, crinoid stems.
This ledge is on slope above
road. At 1078' argillaceous
ss. that breaks like shale for
about 20' in bed & bank of
stream. These had very iride-
scented, short *Sp. micronotus*.
The upper beds are rather

sandier than below.

139362

1120-1135 - dark shaly ss. with very few fossils.

R. liata, *C. cf. coronata*, *P. al. constricta*

1150-1165 - crumbled bank of dark arenaceous shales & ss. blocks. Shales with $\frac{1}{2}$ " quartz pebbles. Fossils common:

<i>Cystiphyllum</i>	<i>I. exigua</i>
<i>Thalysa</i>	<i>S. granulosa</i>
<i>A. Boydi</i>	<i>M. concentrica</i>
<i>S. erectum</i>	<i>Mottville</i> sp.?
<i>Crinoid stems</i>	Plants.
<i>A. cora.</i>	<i>S. alveata</i>

1165-1172 - covered

1172-1180 - thin bedded argillaceous ss. at base for 3' then 5' of coarse ss. with shaly fracture

1180-1190 - covered

1190-1210 - In N bank of stream alternating sh. sandy shales, ss., and cross bedded sands.

At 1195 fossils abundant:

S. acuminatus *S. erectum*
S. granulosa *Urg. infl.* sp. *micronata*
C. coronatus

1195-1202 comes a layer of sandy ls. abounding in a *Spirifer* like the *Mottville* sp. & large *Camara pectin.* Above this are 30 feet of cross bedded ss. above this are 1' of sh. & 1' of ss. then comes about 6' of crumbly arenaceous shale going

coral bed
shale 3'

12' covered

Shaly ss.

15' 16'

cross
bedded

30'

7' sandy
sh.

ls. granular
sandy sh.

1195
5'

into irregularly bedded ss. ¹⁶³
Here were seen large
T. coronatus.

1394

S. erotalum

1250' - 1262' covered

1265 = 1225 1262 - 1265 - dark, ^{sandy} shale
abounding in fossils:

Spirifer sp. *Narguta*
Productella cf. *dumosa* *M. concentrica*
Camerozoechia *S. circularis*
M. mytiloides

Above these is sandier rock
for 1' with large *Cystiphyllum*
1265 - 1292 - cross-bedded ss.

1292 - 1330' covered

1330 - 1335 thin bedded dark
arenaceous shales. In places
shows prominent pencil weathering.
This is type of shale that
passes into red shale.

1335 - 1415 - covered

1415 - 1420' rather heavy coarse,
cross-bedded ss. Upper layer
with small quartz pebbles, and
a fragment of *C. coronatus*.

1420 - 1422 covered

1422 - 1425' - crumbly argillaceous
ss. abounding in *N. arguta*,

1425 - 1435' covered

1435 - At 1435 are 3' of crumbly
arenaceous shale with
N. arguta
Pal. costata
small *Camerozoechia*

13954
Here shale grades upward into hard ss. at 1448' where *Camurotoecia*, *S. granulatus* are common. What appeared to be *S. acuminatus* is also present. *Niaguta*.

Rock continues upstream. From 1435-1470 it heavy cross-bedded ss. 1470-1480 thin argillaceous ss. with *Lentaculites*, *C. coronatus*, *Bygonia*. The top at 1480 is hard sandstone. Then comes dark arenaceous shales with thin lumpy ss. *Cor. flabellus*, *Sp. mucronatus*, *Camurotoecia*. 1480-1510 - These arenaceous shales pass upward into cross-bedded or rather heavy-bedded ss.

1510-1515 - covered. Probably shaly rock.

1515-1525 shaly ss at bottom, going to hard somewhat calcareous knotty ss. at top. 1' above 1525 is arenaceous sh. Crinoid stems.

1525-1545 - Same sequence arenaceous sh. to coarse knotty calcareous ss.

At 1546 - begin thin arenaceous shales, olive shales breaking into smooth plates and knotty, green sh. The beds are separated by ss. layers. These extend to 1539 where there is 2' of hard light colored

1569
915

654
630

calcareous ss. Above this are 165
dark shales and heavy ss.
alternating for about 7' 1396
1585 - 1612 - mostly heavy bedded
ss. some thin argillaceous
ss.

Recheck
1565 → 1612 - 1662 - covered.
1662 - 1670 - crumbly, knotty olive
green shales.

1670 - 1750 - covered
1750 - 1770 - heavy layer of light
grey ss. with clay balls + plant
stems.

1770 - 1775 - covered
1775 - 1790 - soft arenaceous dark
shale passing into ss. Then
comes 3' of heavy massive ss.
in beds 9" thick then comes
about 7' of cross-bedded ss.

~~1790~~ - 1802 - covered
1802 - 1803 - knotty ss., crumbly
1803 - 1810 - covered

1810 - 1' of coarse, limy, heavy ss.
1811 - 1816 - covered. ~~at~~ 5 ss. in bank
1816 - 2' of heavy, calcareous ss.
in 3 thick beds.

1816 - 1825 - cross-bedded ss.
at 1825 is 6" fossiliferous bed:

1735 instead
of 1825

S. granulosa

Coln. flabellus a

C. coronatus

Cyrtina

O. congregata

L. mucronatus (wide)

The rock is calcareous ss.

This is undoubtedly
same bed as exposed
south of N. Blenheim

This is succeeded by soft 166
arenaceous shales for **1397**
feet. Then a heavy bed of cross-
bedded ss. con. ~~is~~ in. The
top of it is at 1845. These ss
show reddish weathering. At 1845
this is capped by a massive
bed 6 or 8" thick abounding in
C. congregata, *N. arguta* also
present.

1845-1852-covered

1852-1862 arenaceous shales
passing upward into ss. At
about 1854 was seen one
specimen of *C. coronatus*. At
top of interval are knotty,
drabably green ss.

1862-1878-covered

1878-1881' flaky dark arenaceous
shale.

at 1882 - About 3' of greenish grey
very massive heavy ss in
thick layers. It is about 3'
thick where exposed in the
woods & weathers to a reddish
brown. At 1895' this bed is in
the road.

1885-1900 -
Red heavy ss

1900-1910
covered

1900-1785

1900-1910 - Another layer of heavy red ss.

1910-1935 at base were crumbly
blocky red ss. & sh. separated
by heavy red ss. The top half
of the interval is cross-bedded
red ss.

1935-1952-covered

1952 - 2' bed of heavy ss in

in 2 beds, the lower one 167
1 1/2' thick. 1954-1958 - mostly
red + green ss. There is a

1398

a 4' bed of red, crumbly shaly
ss, the top at 1958'

1992=1882

1958-1995 - red sandy, crumbly
rock with interbedded green
ss. in thin beds. At 1995,
comes shaly ss for 1' containing
C. congregata. Then an 11" bed
of ss capped by 4" ss. The former
with *Camantocchia*, the
second with *Camantocchia*,
Sp. mucronatus (Hean. type)

Bed at 1960?

N 38° W

3 1/2° S

This is succeeded by 3' grey
shale and then 1' of light
green shale. This is capped
by green ss at 2015'. 1999-2015 covered

2015=1900

2015-2035 - cross-bedded, thin
bedded ss. ~~Top of hill at 2030'~~
2025-2030 covered

Hand walking from house at 1900

0-1 covered

1-2 - lower 2' covered - upper
green cross-bedded ss.

2-3 - same

3-4 - Upper 2' same - upper
3' covered.

4-12 covered Above 12 are 3'
of crumbly green sh + thin
ss.

12-14 - covered (except lower 3')

At top 2 1/2' ledge of conglomerate
ss. pebbles are ferruginous
clay

14-15 - lower 2' in cross-bedded ss. 168

1399

15-17 - gray cross-bedded ss.

17-18 - lower 2' in same ss. best covered.

18-21 - covered - 3' of ss, heavy bedded at road forks.

Under bridge at 1320' came hard ss which underly the soft slaty shales at 1320-1325'

September 9.

169

Keyser Kill -

1400

- 0-1 - Soft crumbly, dark gray arenaceous shales with thin ss. layers - *P. sectifrons*, *Mottville* sp., *O. parvula* c, *N. arguta*.
- 1-2 - same rock & small *O. crinita* c, *Mottville* sp., *O. parvula* c, *P. sectifrons*, *N. corbuliformis*.
- 2-3 - nearly black sandy sh.
- 3-4 - " " " " for 2' then comes storm-roller + ss for 3 1/2'.
- 4-5 - Storm-roller layer, huge rollers in greatly distorted arenaceous shale.
- 5-7 - Still in storm-roller band. Huge ss ellipses and irregular masses and included in nearly black arenaceous shale, which has a somewhat phyllitic lustre.
- 7-10 - Alternations of soft arenaceous dark shale and beddy beds of ss. At top of 10 is a pebble zone. 1 quartz pebble of 3/4" was seen.
- 10-11 - Top of 11 is top of cascade which is over bluish grey arenaceous shales with *P. lirata*.
- 11-12 - same, coarser at top.
- 12-13 - crumbly flaky dark sh.

13-18 - mostly dark gray shale / 20
 with occasional harder ss
 beds which are usually thin.
 This is a vertical cliff so we saw
 no fossils. At top of 18 in an
 arenaceous layer was seen
O. flabellus Mottville sp. *Leiodontina*
A. boydi *Ancistrum* *P. aculeata*
Hom. plan. *I. exigua* *E. linchlaeni*

18-19 - 4' of the softish shale
 with fossils. Then comes a
 bed of heavy ss. (Calcareous?)
 The lower 1 1/2' are in this step
 The lower surface of this
 ss. layer has
Corn. flabellus ~~Mottville~~ sp.?
Leiodontina *E. circularis*
B. alveata Mottville sp.

At 16 H.W. is the upper ledge of the
 second fall in creek - bedded
 ss. On the floor of the upper
 layer was seen:

Mottville sp. c. *C. congregata*
I. carinata a

There is just 1 1/2' of dark
 shale between the floor of the
 upper fall and the base of
 the layer with *B. alveata*. At
 19.

19-20 - The heavy bedded ss.

20-21 - Heavy bedded ss.

separated from the layer
 below by 1 1/2' of shale.

At 21 is back of the

21-22 — sp. sh. - 1402 171

Cinnabachia, Matville ss.
21-23 + 3' — at base is a hard
massive bed of ss 1' thick
above it is arenaceous shale,
with 2 perfor.

Sept 9.

1030-1092 — covered.

1092-1099 — rather heavy-bedded, ^{gray} ss.

1099-1112 — covered

1112-1115 1' hard ss with clay-balls
& 2' argillaceous ss. breaking into
thin plates.

1115-1120 — covered.

1120-1125 5' of coarse bedded gray ss.

~~1124~~ — upper layer with sandy pebbles

1125-1142 — covered

1142-1149 — 7' of coarse, platy, ss.

1149-1168 — covered

1168-1179 — 2' coarse gray ss. with
ferruginous clay balls. Above
this thin sandy ss.
Some with parallel fracture, which
extends for 8'. Then coarse
argillaceous ss. with abundant
fossils. These B are interbedded
with arenaceous shales.

Corn. flabellus, T. submarginata

N. arguta, C. Toroneum

G. circularis, G. canaliculatus

D. delavayi, R. modesta

The arenaceous ss. here
extends to 1190'



1190-1200 - covered

1200-1212 - mostly cross-bedded
platy ss.

1212-1217 - covered

1217-1219 - platy grey ss.

1219-1222 - covered

1222-1245 - "

1245-1252 - 7' thin platy ss. of
Univ. Quarry type.

1252-1432-16/17

Sept 9th - Dark bluish gray, shaly
ss. with *P. lirata*
Ledge 5'± at 1095'

~~A~~ A little N of ledge and
opposite house on W side
had 1' ss in field
Grammysia
S. erectum c.

This is at 1102.

1102-1110 covered

1110-1120 - very thin ss. breaking
into small flattish pieces.

Contained *S. circularis*, *D. deloagi*

Sept 9th

1120-1130 covered

1130-1133 - 3' ledge argillaceous ss.
with *S. alveolata* a, *Son. ham.*

This ledge of *Grammysia* may
equal the bed in Keegan Kill
just below the falls.

log 10 - 2978 - 155

September 10 -

1404

173

181

Fossils -

Brachyotaria *Corr. flabellum*
Productella
Northville sp. c. *M. concinnata*
T. erigone

Below this thin fossiliferous sh.
 up 12' cross-bedded ss. with
 ferruginous clay boulders. This
 is covered down for 14'. Then
 comes shaly dark ss. at
 top passing downward into
 soft arenaceous shale - 12'
 Fossils *M. subulata*, *Pal.*
constricta, *M. trigona*, *S. creata*,
For. ham., *Aviculapecten*
H. oblongus, *Planorbis*

Sept 10' - Hell Hole

Handlevelling begun at stream
 intersection

0-34 covered

34-35 - upper 4' in hard, irregular
 bedded ss. containing *Redosynchy*
S. macronotus. These are alternated
 of heavy-bedded ss. with fine
 argillaceous ss. or sandy shale.

35-36 - At base of 35-36 found
G. erectum, *M. trigona*, *C.*
scitulus, *S. macronotus* (newly
 found) *For. ham.*, *Canonicornis*



This section of Sep 10' begins at about 1500' which is 790' above the

Onondaga. Below the large Tropidoleptus Solville ought to be 80'

- P. liata, This sep 1405 1/2 shows same alternations
- 36-37 - similar rock, mostly irregularly bedded ss. with cross-bedded ss at top.
Gymnospira *Corn. flabellus*
P. irregularis
- 37-38 - mostly sand irregularly bedded ss. 2' from bottom in a somewhat calcareous bed came -
I. cuneata *Pal. marginata*
S. mucronatus *Corn. flabellus*
 2' below top came *Pal. pyram* and a *Tropidoleptus* of large size.
- 38-39 - Coarse irregularly bedded ss with large *Tropidoleptus*, *S. mucronatus*, and *S. mucronatus*, small
- 39-41 - covered
- 41-42 - At base sandy shale to ss for 4'. Top 1 1/2' in. dark arenaceous sh with *N. oblongatus* *C. flabellus*
O. parvulus *Pal. constricta*
P. liata *Cameroecchia* *C. constricta*
Gymnospira *P. liata*
Gym. coninata? *Leiorhynchus*
P. discordum *P. irregularis*
S. constricta
- 42-43 same - culminating a few inches of ss.

43-44 - Thin bedded ¹⁴⁰⁶ sandstone - rather hard

44-45 - same; 45-46 - same hard at top.

46-47 - irregularly bedded & flat bedded ss.

47-49 - shaly, lumpy sandstone

49-51 - very hard irregularly bedded ss.

51-52 - About 2' above top of 51 comes a capacious layer of knotty ss. but no fossils.

The top of the ^{big} falls comes at 55. The uppermost 3 steps are in arenaceous shales which pass into hard ss at the top of the falls. At brink of big falls were seen:

Pumiliofascia *S. granulosa*?

Mottville sp? *C. scitulus*

55-56 - 3 1/2' of cross-bedded ss. and 2 1/2' feet of hard arenaceous shale

56-57 - 1' ss at bottom with wide sp. *Ammonoites*, *Lingulodiscina*, shaly ss above with large sp.

57-58 - same

58-59 - same argillaceous irregularly bedded ss.

S. mucronatus, *C. coronatus*

59-60 - hard shaly ss. culminating in 1' of cross-bedded ss.

60-61- ss culminating ¹⁷⁶
in a storm-roller **1407**
at top (1 1/2') P. linearis

61-62- ss with P. carinatus
S. mucronatus C. coronatus

62-63- Unfossiliferous sandy
shale.

63-64- thin bedded shaly ss.

64-66- Thin bedded ss. in
bank, covered in stream-bed

66-67- lower ~~2~~ 2' storm
roller. Upper part thin
bedded ss. with S. mucronatus

67-68- cross-bedded ss. Storm
roller at top.

68-69- thin bedded shaly ss.
no fossils.

69-74 same blocky shaly ss.

74-75- same shale for 2'
Heavy heavy ss **23** with fossils

S. alveata S. erectum

S. granulosum S. linearis

P. carinatus C. congregata

Pern. flabellus S. mucronatus

A. umbonata Tentaculites

Mott Sp. M. arcuata

L. penflans M. edentata

This bed forms the top of the
step.

75-78+2 = thin bedded argill.
aceous ss breaking into thin
shaly chips. This is capped
by 20" bedded ss with fossils.
The ss in 3 layers 1 1/2" 10" and
8" at the top. The 2" bed is

large fossils, Dip + strike 177
on fossil bed N 68° W 1408

S. mucronatus

S. erectum

C. coronatus

The lower 2" bed has small
quartz pebbles. The upper 8"
bed has many large *Spirifer*
S. mucronatus 2 *S. long. lam.*
S. granulatus *S. flabellum*
L. graphium *C. coronatus*
T. carinatus *Mod. goniatites*
This upper bed is highly
calcareous.

Section above fossils at 78+2
0-1- thin soft micellaceous
ss. with: *Holbergella*,
S. alveata 2, *C. bicinctus*
1-2- coarser shaly ss with
S. nodosostata
S. acuminatus
S. granulatus (*Solutella* type)
2-3- shaly ss, calcareous at
top
3-4- same
4-5- lower 2' very massive
hard ss. with large *S. p.*
The upper beds are shaly
ss. but hard & massive
5-7- are 1' fall all in
moderately heavy-bedded
cross-bedded ss.

7-8 - same but 1' below 178
 top of interval is micaceous
 sand with small pebbles
 fossils 15" thick. This

1409

near base of last or 4th
 falls. Mottville Sp.

8-12 - heavy bed, cross bedded
 hard gray ss.

12-13 - thin shaly ss below
 brink of falls:

Productella *C. tenuistriata*
I. carinata

13-14 cross-bedded ss at
 brink of falls. *B. alvata*

From 14 to 24 up the side of the
 gulch in the field east of the
 houses were scattered ledge
 of ss.

At 24 is a 5'-6' ledge of thin
 shaly ss. with

<i>P. flabellum</i>	<i>D. delany</i>
<i>A. boydi</i>	<i>Avic. princeps</i>
<i>C. complanata</i>	<i>D. erectum</i>
<i>C. coronata</i>	<i>Lepteria</i>

At 27 comes the sand

Sept 10² - Shales of Cardiff type
 20-25' exposed in upper 5-10'
 thin ss beds are common.

S. fissurella abundant.

Sept. 10³ - Ridge of Allyn zone
 very close to top at 1110'. This
 makes the local bed called the

76

77

78

78

26

10

48

49

50

51

52

53

4450 from Cardiff
 4600 from 720

Cliffs all in the *Athyris* bed ¹⁴¹⁰ 179
Ledge at 1110 - forms ~~long~~ flat
corresponds to the 930' level
of *Vromans Nose*. At 1205 in
the hill just NE of L in
Middleburg are ledges containing
Com. flabellus in abundance.
This is ~~it~~ not the top of the
Athyris zone which should
be about 25' higher. If the
ledge at 1110' corresponds to
the 930' level at *Vromans*,
there should be 120' more to
be added to the 1110' ledge. This
would put the top of the
Athyris zone in the southern
part

Sept. 11.

180

At 2010' in road-bed, making
reddish-weathering ss. 7 vertical
exposed but it may be all the same
bed. Too irregular to get the structure.
Look in notes on Sept. 4 section
to see if I recorded paces from
old mill (Borst) to road crossing
gully. It was 220 paces.
Below old mill came Meristella
zone

1740 - bluish arenaceous slates with
Canavertochia, *C. plicata*, *G. rectus*.
About 15' exposed.

Sept 11' - Section completely covered
till second house on N side of
road is reached; here at the
bend of the road at 1210' come
11-12' of coarse irregularly bedded
limp ss. with *C. globulus*,
M. concentrica, *S. appressus*.
This is about the top of the *Athyris*
zone.

Handlevelling from this ledge at
1210'.

0-13 - covered

13-16 - Coarse dark, arenaceous
shales that crumble to small
irregular pieces, interbedded
with thin beds of hard ss.
Saw no fossils.

Next Ditch
Church.
Ramp

16-20 - covered

20-24 - dark, crumbly arenaceous shale abounding in *P. lirata* in the upper part (1/4) of the interval

1412

187

24-28 - covered

28-32 - near bottom rather heavy-bedded sandstone but rest of interval lacking uppermost 2' is in thin, wavy, cross-bedded ss. At the very top of the ss. is a fossiliferous layer with (13").

C. coronatus a., *S. mucronatus*, *G. circularis*, *S. granulosa* (Dols type)

The interval is terminated by 2' of arenaceous lumpy mudstone with *S. mucronatus*, *Th. corbuleformis*, *P. lirata*.

32-33 - The mudstone continues through this step but at the top is capped by 6" of hard ss. Additional fossils: *Leiospteria*.

Sept. 11th - climbed of stream at 1120 hard ss 6' without fossils, above this in fault are 30-40' of arenaceous sh. alternating with thin beds of ss. I think all this belongs beneath the *Athyris* zone.

Traveled up 40000 miles on Speedometer today.

Sept 11³ - Long cut in heavy, coarse ss. Section begins 0.3 miles N of Franklinton, at second bend in road N of Franklinton is a culvert. Here are exposed 4' of of dark rather soft shales in the ditch & culvert. Fossils in the soft shale are:

1413

E. sinuatus & *E. granulosa*
P. canaliculata & *M. concentrica*
Near the base of the shale fossils are very abundant. This shale is abruptly succeeded by ss. in the base of which occurs *Mya*, *E. sinuatus*, *P. flabellum*, *E. planum*, *E. granulosa*, *E. coronatus*, plants.

The lower fossiliferous layer is quite calcareous, when fresh but rather brown when weathered. The shale extends

N for 100 paces from the culvert. The culvert is in the lowest part of section just about 50 paces from the S end of the exposure. The maximum thickness of the ss. is about 15' and is at 100 paces N of culvert.

The ss is for the most part coarse-grained, heavy, irregularly bedded, light grey to greenish grey in color. Cross-bedded in places. When

4'

weathered it is mottled by 183
small spots of iron rust
The 40 pinnat. layers of the 1414
exposure have fragmented
fossils and broken bryozoans.

The section ends at the
second house from Franklinton
on the W side of the road.
Here the upper part of the
exposure becomes thinner
bedded quite prominently
cross bedded in places. I
would guess this adds about
5' more to the layer.

Stephanocrinus
Get ~~Trachocrinus~~ for Miss
G. Look up Albany specimens
of ~~Stephanocrinus~~ in Springer
coll. Crinoid Kirk was to
send.

126
953
796

Sept 12 -

184

1415

Section in small gully - land valley
begin about 950'

0-1 - thin argillaceous ss. with a

hard 4" layer at top which has
crinoid stems; *S. planumbona* two

1-2 - hard shales + ss with

Camarotoechia, *G. circularis*

Theraps

2-3 - thin argillaceous ss. 3-4 in

4-6 - covered

6-8 - Mostly argillaceous ss
~~with~~ dark grey in color

G. circularis, *Camarotoechia*

8-10 same

10-13 - soft crumbly argillaceous
sandstone dark grey and like
shale - near top of 13 came:

C. coronatus, *S. grandis* (Solo. type)

C. tenuistriata, *Gon. lam.*

13-14 same

14-15 " at bottom, culminating

in 3' of storm-roller with

wide *S. mucronatus*, *Camarotoechia*
conjugata

15-16 - mostly cross-bedded ss.

16-18 - same

18-19 argillaceous irregularly bedded
ss.

19-22 - covered - cut to 22 on

a cut by side of road

22-24 + 2 This road cut is in

arenaceous crumbly shale.

G. circularis *N. arguta*

S. crinifera *M. crinifera*

160
950
7100

S. alveata *S. mucronatus* 1416/84
M. mytiloides *M. oblongus*
Com. *Platellus* *S. acuminatus*
S. granulosa *Tromus*

in a very fossiliferous layer
at top of ^{quartz} B pebbles up to an
in inch in one direction occur
24-32 - covered

At top of 30 comes a 10' ledge
in hill behind foundation of
old house that once sat on a
small knoll. The ledge is mostly
cross-bedded ss.

Sept 12' - Rather long flat in
stream bed and irregularly
bedded, fairly coarse ss. Here
were seen -

A. acuminatus *S. mucronatus*
D. eucharis Crinoid stems
P. Platellum *C. congregata* a
About 15' vertical are exposed.

Keyser Kill cont'd - Hand levelling
at 718' -

0-4 - covered

1-2 - rather hard arenaceous
shale, crumbling into small
chips. At base of step are
large sp. *M. argata*
The rock is very dark grey
with many ferruginous
concretions. These shales
columnate in irregularly
bedded ss. with *P. lineata*

Productella, + C. conjugata 1417 185
The top of these ledges is at 758'.
Eggs were almost
business from main highway
bridge to mill at 762'. The
mill is behind next to
coal house on S side of
road going up the Keyser Hill.
The upper ss ledges at 762'
merge with those upstream
where the starfish was found.

Sept. 12th — lowest 10' of Wanballe
Mts. alternations of arenaceous sh
& ss. We saw *D. canaliculatus*,
S. mucronatus, *G. erectum*,
G. circularis.

September 12th —
0-1 — Irregularly bedded, rather
heavy-bedded ss.
1-2 — covered
2-3 — Upper 3' dark, irregularly
bedded ss.
3-4 — covered —
4-5 — dark arenaceous sh for 2 1/2'
followed by 3' storm-sorted bed
At the very top is a large *Spinifer*
5-6 — rather heavy ss.
6-9 — Extremely massive coarse
ss. In the top 2 feet
pebbles are quite abundant.
The ss is very hard, when
weathered shows it.

The crinoids here
are *Chonetes*
Guthrieocrinus making
this Peckaport.

rust spots like the 1418 / 86
Franklinston locality did. In
the top 3' shows crinoidal columns,
Mottville Sp., *Camantocchia* a.
C. coronatus. *Spirifer* like *S.*
sculptilis, *I. carinatus*
9-10 - In cross bedded ss
occurred *Gemacocrinus*,
D. dekeyi, *B. submarginata*
I. carinatus, Mottville Sp.,
Pseudoceras, *S. croceolam*
P. patulus. Mottville Sp.
at top of cross bedded ss
thru a 10" of arenaceous
shale.

10-13 - storm roller layer
13-14 in lumpy argillaceous
ss.

Sp. like <i>sculptilis</i>	<i>I. submarginata</i>
<i>Ariculopora</i>	Mottville Sp.
<i>I. carinatus</i>	<i>S. alveata</i>
<i>N. varicosa</i>	<i>P. sectifrons</i>

14-17 - brings us to road
and there we are shaly ss
all the way. The bridge at the
road is at 1910'

Hand levelling above (W) of road
0-7 arenaceous dark shales
alternating with ss. & culminated
in ss at top of interval. Saw
no fossils

Sept. 13 - 1419. 187
 Hand levelling begun at 1362'.

0-1- rather massive, coarse ss. weathering red where exposed. The color is light, grey, brownish tint. Rest of gully heavily covered.

Sept 13 - section a little west of gully. at about 1275' next first house w of gully is a very fossiliferous bed, and below it are 3-5" of soft crumbly dark arenaceous shales. The fossiliferous layers are 3-4" thick and contains

N. angulata *Corn. Floella*
L. macrodonatus *M. concentrica*
Sp. like sculptilis *A. cf. spiniferoides*
C. conplanata *R. banyanensis*
L. perplana *Cyrt. ham.*

The fossil bed is followed by about 6' of platy ss. Then follows 5' of heavy bedded ss, the low 3' of which is storm-roller. In this bed were seen *M. concentrica*, *C. tenuicosta*, *L. perplana*, *S. granulosus*.

Above the 16" interval is a sizeable quarry showing about 15' of rock. The lowest 5' in gy. is platy ss. with a little shale, then follows more more massive ss.

Very heavy bedded ss. massive in section

Platy ss 6'

Moderately heavy bedded ss.

Heavy bedded ss 2'

Gravel 30'

5'

6'

3'

Qy. of Stephen
Goodfellow

rather irregularly bedded. 1420/88
upper surface of this layer
is irregular due to large scale
cross-bedding. The upper layer
of the qy is formed of thick
platy ss interbedded with some
thin layers of sh. Near the
center of the qy at the entrance
this upper bed is some 3-5'
thick but eastward it thickens
quickly to 10' at the expense
of the massive bed below. If
this should be an unconformity

it must be an intra-formational
one.

Sept 13' - About 2080-2100 - coarse
grey ss. with plant fragments.

At 2060' come about 9' dark
blue-grey argaceous shales
abounding in fossils:

<i>O. undulata</i> a	<i>S. micronatus</i>
<i>S. granulosa</i>	<i>S. erectum</i>
<i>S. aggriculus</i>	<i>Don. ham.</i>
<i>S. cuneatus</i>	<i>P. lanceolata</i>
<i>S. arcuata</i>	Mottville Sp.

Apparently Prosser's *S. medietatis*
= Mottville Sp. I think this
horizon is upper Ludlowville

Sept 13th -

1421/89

0-1 dark arenaceous shales
plant fragments

1-5 at base thin platy ss
passing upward into very
hard massive ss, which may
be the same as the hard massive
stuff at 8.12³. The uppermost
layer has quartz pebbles &
Ammonofoecula

5-6 - dark crumbly arenaceous
shales with a ss. band near
top, which contains:

Gon. ham. *Mottville Sp. ?*
Corn. flabellus *Mod. concentrica*
Cypinacardella sp.

6-942 - platy ss. At Stones
the bridge at 800'. Above
the platy ss are 5-6' of
dark arenaceous shales:

Gon. ham. *M. concentrica*
Mottville Sp.

Sept 13th -

715-730 - arenaceous mudstone
with *Succinea*, *P. carinata*,
Crinoid stems. This is lower
part of *Athyris* zone.

730-820 - covered.

820-838 - dark grey, arenaceous
shales crumbling to small
lumps with
C. mucronata *M. subulata*
P. luvata

912
681

231

138-845 covered 190
845-851 - argillaceous 1422
rather hard.

851-862 - covered

862-885 - argillaceous with
Amantocochia alternating
~~with~~ with thin beds of ss.
and culmination is 3'
of cross bedded ss below
885. Saw *S. crocatus*.

885-895 - covered

895-905 - coarse irregularly
bedded argillaceous ss. Saw
no fossils

905-912 - covered

912-1020 Arenaceous, mostly
shale breaking into irregular
lumps.

P. linearis C. concretionary

At 920 in a hard bed 6" thick
were seen.

S. granulatus (Solo. type)

At 955 came a layer of thin ss
with whole *S. mucronatus*

Amantocochia, *C. coronatus*.

About 10' lower came a snail

A side road goes off at 955

At 973 we saw *S. mucronatus*,

C. congreata, *S. granulatus*,

S. acuminatus, *S. alveata*

P. angulata

At 980 - came *C. coronatus*,

S. mucronatus same also

at 995

On main road at 14423/91
comes some arenaceous sh +
shaly ss. This goes to 1013
1013-1058 - covered

1058-1070 - crossbedded ss.

1070-1150 - covered

1150-1163 shaly crumbly on
very much like arenaceous sh

Calymene *foecula* *C. flabellus*

P. moniliformis *M. concentrica*

P. constricta *J. carinata*

H. bellistata *C. fasciculatus*

Cymatospira elongata *C. alveata*

P. lanceolata *D. brachyotus*

1163-1185 - covered

1185-1188 - hard massive ss.

1188-1200 - covered

1200-1205 - x-bedded ss.

1205-1210 - covered

1210-1350' 1210-1221 - soft arenaceous
shales passing into hard
flaky ss at top, 6' below
fp were found:-

A. boydii *A. fenestellus*

C. flabellus sp. like sculpin

S. granulosa *J. carinata*

C. complanatus *C. megalostriatus*

S. micromatus horn horns

1221-1228 covered

1228-1283 - arenaceous dark
shales and some ss. About
3' below top are coarse sands
with *C. coronatus* & large sp.
At top of 1283 - *H. arguta* is
very abundant. Also

1283 =

1425

This is
apparently
Prosser's
last fossil
zone.

at Corners Miss G. set

Barometer at 1640 and checked

down. She was 120' high all

the way which was the error

out at the rd corners in going up the section

P. flabellum & *granulosa* 192

R. spiniferoides

From 1283-1300 - we ~~1424~~

cross-bedded ss

1300-1340 Dark crumbly argillaceous
ss. breaking into small
irregular fragments

1310-1322 - covered

1322-1335 thin bedded platy
ss.

1335-1351 - ss goes up into
irregularly bedded hard ss
and at 1360 is hard so much
like Solville. 2' below top
are rusty, squarish, calcareous
concretions like those we
saw at Richmondville.

1360-1365 - covered

1365-1385 - platy ss passing
into very massive, very
heavy bedded ss.

1385-1420 - arenaceous sh
& ss. alternations. Mostly
covered in woods.

1420 -

The rocks above the Attyris
zone here are chiefly blue
arenaceous shales. I did
not recognize typical
Solville, but it may be the
hard layers at 13518 = 1495.
The corrections on this section
are meaningless - Prosser is
apparently 100' too high as is the rd corner.

Top of Verrill zone

Dark bluish green sandstone
passing upward into heavy
bedded ss.

133'

Top of Althys zone 630'

Mudstone, greenish
upward into rather
heavy bedded ss.

180'

Acrocephalus +
Pterodactylus
shale

180'

10' mainstella zone

40'

20'

115'

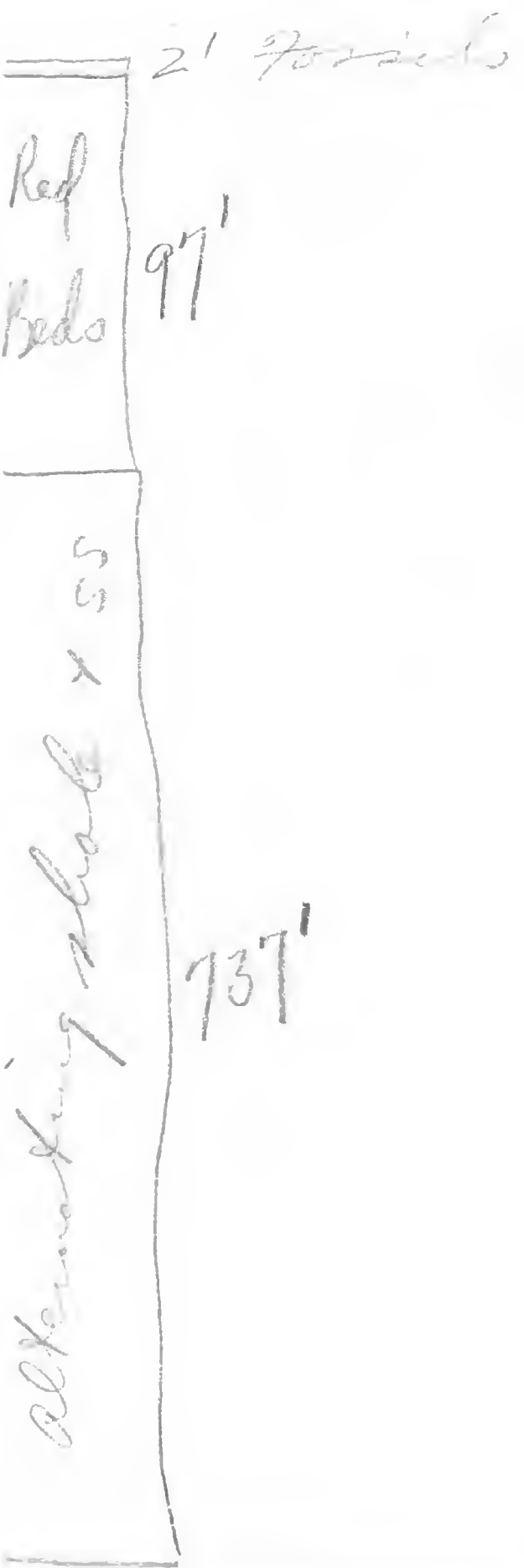
9"

5'

20"

70' U.S.

on.



205/10
205/10
1105/32
1090
1090
1200

735
630
1425
780
1115

995

97
737
133
630
1597'

98'
 sh + ss 17'
 gr ss 14'
 ss 5'
 platy ss 2'
 ss 10'
 thin ss 10'
 thin ss 5'
 sh ss 16'
 sh + ss 12'
 ss 5'
 ss 10'
 sh + ss 4'
 thin ss 7'
 sh + ss 7'
 X-bed ss 7'
 ss 12'
 ss 5'
 ss 15'
 cross-bed ss
 blk sh 20'
 ss + sh 2'
 blk sh 11'
 ss + sh 4 1/2'
 sh + ss 13-20'
 sh + ss 8'
 sh + ss 16'
 sh 3'

M. subulata

C. flabellum

C. undulata + *other fossils*

Esthonia

Centronella is 400' above Esthonia

336
 204
 141
 681
 1680
 2361

2744
 45
 2789

400
 2350

104

171
 244
 415

23
 145
 1670
 1215

285
 1215
 70

375
 1250
 1625

271
 2340
 1960
 380
 46
 27'
 68'
 31'
 4'
 5'
 30'
 48'
 12'
 61'
 142'
 59'
 61'
 89'
 27'
 14'
 47'
 51'
 90'
 8'
 60'
 12'
 30
 30
 9
 361
 350
 43
 2200
 350
 400
 600
 1000
 2430

mesostichia

centronella

403 Tully + Shubert

Porto Point

3000
Dried

S. tullia

Division of Centronella

Many Foss.

350
 400
 600
 1000
 2430

September 14. - 193.
Handlevelling begun at 779' **1425**
0-39 covered

39-42 - At 39 comes heavy bedded ss with 4' of interbedded shale & ss at bottom. The whole exposure is 15'. The only fossils seen were *S. micromatus*, & *P. flabellum*. This rock is exposed on side of gully up to 42.

42-47 covered; 47-48 base of falls comes half way up in this step. At base of falls are 1' of green (olive) soft shales followed 1 1/2' of irregularly bedded ss. Then green sh passing into ss. 4', then ss to top of 48-49.

49-50 - ss, then 2' from base is about 9" - 1' of shale conglomerate.

50-51 - heavy massive sandstone. One foot from the top in a clay pebble bed were found abundance of *S. carinatus*. The top foot of the interval is in argillaceous ss or thin bedded ss.

51-52 - thin bedded ss.

52-53 - very heavy bedded, coarse ss.

53-54 - thin bedded argillaceous ss.

54-55 - 1' thin bedded ss, then light grey heavy bedded platy and massive ss.

55-56 - heavy coarse ss for 3' then thin bedded argillaceous ss.

56-57 - same. 57-58 -

57-59 - chiefly rather heavy bedded irregularly bedded ss.

59-62 - chiefly cross-bedded ss, rather platy.

62-63 - heavy platy ss.

63-64 - covered

64-65 - lower 2 1/2' covered. Then shaly ss. for 2 1/2' and a 7" bed

$$\begin{array}{r}
 39 \\
 5 \\
 \hline
 195 \\
 6 \\
 \hline
 201
 \end{array}$$

78

$$\begin{array}{r}
 71 \\
 5 \\
 \hline
 355 \\
 12 \\
 \hline
 367 \\
 777 \\
 \hline
 1144
 \end{array}$$

142

158

of hard ss caps a small falls. 194
45-69 - covered.

1426

69-70 - Lower ~~2~~ 3' in hard heavily bedded
calcareous ss. Upper 2 1/2' covered. The very lowest

bed at 69-70 was hard calcareous, brown
weathering rock. This occurs also in a
cut to the south and beneath it are 10'
of very massive ss. Above this
calcareous bed the 2' above it are
8' of soft arenaceous dark shale
and 8-10' of platy ss. At the top of
the ss. were found: *S. erectum*,
C. boothi, *C. coronatus*, *Mottville* sp.,
S. mucronatus, *S. granulatus*.

70-75 - covered in bed of stream. At 75
in bank is ss + sh. for 10'

75-90 - covered - 2' of grey ss below

90; 90-96 - covered. In bank from
96' up are about 4' green sandy sh,
then about 1' very dark sh. capped
by 3'-4' of massive grey ss.

96-102 - covered

102-103 - lower 1 1/2' covered. Then
comes massive brownish grey
ss.

103-104 - green sh. 1/2' covered by
grey shaly ss. 3'

104-106 - covered

106 in bank comes 5' grey ss +
green sh.

106-107 - same section in stream

107-109 - covered

109-110 - 4' bed of massive ss
mottled red + green from weathering
on top of outcrop, but greenish
inside. Layer in 3 pieces very
massive. Upper 1' covered

110-111 - upper 4' in soft flaky
green (olive) shale

111-112 - Lower 3' covered. Upper 2 1/2'
~~the~~ in grey ss. *Mottville* sp. rare

112-113 - same. ~~Upper 2' covered~~ 195
113-114 - Lower 3' in bed 1427
irregularly bedded ss. Upper 2 1/2' in
soft dark greenish grey shale.
The uppermost bed is in 2" of ss.
with *S. granulosa*.

Fossils seen in the shale are:
P. radiata, *O. undulata* v., *Myassa*-
like clam, *S. bisulcata*, *S. circularis*,
Mottville sp., *S. mucronatus* v.,
Sori. ham., *Sphenotus* 2 sp.,
P. lanceolata, *Pal. perplana*, *P. fragilis*,
S. dehayi, *Lingula* sp., *Tentaculites*,
M. pygmaea, *Pal. constricta*, *O. parvula*

114-115 - dark grey sh going into
ss. About 3' up! *S. mucronatus*
& *Camartocchia* (large) are abundant
115-116 - covered

116-117 - green ss + sh.

117-124 - covered. At top of 124 comes
a fall, dark grey shale at base
for 4' passing into thin bedded, platy,
cross-bedded ss.

124-128 - falls. Top of falls in X-bedded
ss.

128-132 - covered; 132-133 - in middle
of step are 2' of massive ss, light
grey speckled when fractured.
Looks like the Franklinton beds.

132-152 - covered; 152-153 - lower 3'
coarse, platy ss.

153-168 - covered. At 68 comes the road

152

760

24

784

527

1141

11336

105

840

1000

1000

1000

1000

1000

1000

1000

1000

0.6 mile S of Granby Hill home

Sept 14¹ -

196

0-2 thin shaly ss and **1428** ss. At top of interval is 15" bed of calcareous sandstone abounding in fossil: *Mottville* sp., *L. machodotus*, "*sp. meastialis*" *G. erectum*

2-4 - very dark flaky shaley containing ostracods. 18" from the top of the bed the rock is sandy and here dwarfed clams were found: -

O. undulata, *P. lirata*, *Aviculopoda* *Grammysia* sp.

4-9 This shale is succeeded by heavy bedded ss. and large storm-rolls. The storm-roller structure here gives a marked reversal of dip. This brings us to top of hill at 810' where there is thin dark flaky shale but it is evidently contemporaneous with the ss.

Sept. 14² - 0.3 miles S. of S14'.

Handlevalling begun at 800'

0-1

Greenish & dark shales alternating with heavy ss.

1-2 - green sh & ss.

2-3 - mostly green knotty shale that crumbles into angular lumps capped by 1" of brown weathering massive calcareous ss

3-4 smooth dark, and olive weathering shales. The dark ones suggest the Sherburne shales as seen at Sherburne

4-5 olive sh. 5-6 - dark flaky sh.

6-7 same, shale quite sandy at top.

7-8 - 2' of dark smooth, flaky sh. 2' bed of hard ^{grey} ss. and 1 1/2' of dark shales.

8-9 - lower 1 1/2' of dark smooth

flaky shales. Rest in heavy ss. 197
9-11 ~~the~~ same hard ss. In the
upper layer which is ~~not~~ 1429
a snail was seen

11-12 - 1' of massive ss with
C. coronatus a., *S. mucronatus*
S. erectum. This bed is followed
by crumbly arenaceous shale with
A. undulata, *Mottville* sp., *C. coronatus*,
C. congregata, *S. mucronatus*,
Leiopteria

12-13 same shale

13-14 - 2' heavy bedded platy ss.
not covered.

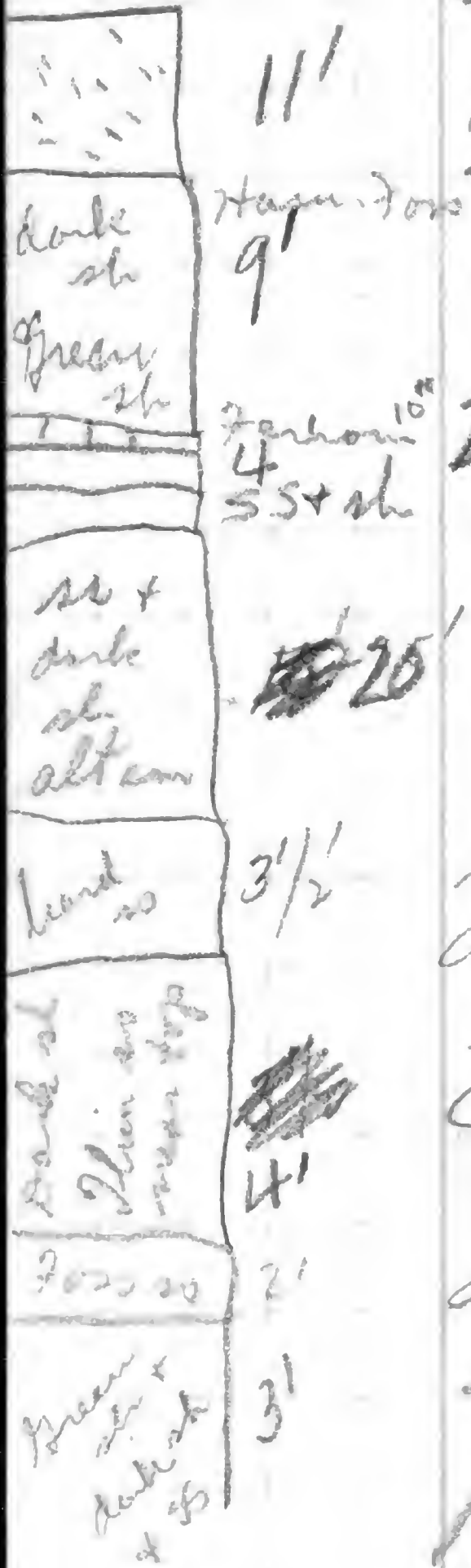
This is just 0.5 mile ^N from N. Blenheim
bridge. Section should probably
start nearer 780'.

On Sept. 14 we saw pieces of red
sandstone all along the bottom of
the ravine but never found it in
place.

In bed at 113-114 of Sept. 14 there was also *C. coronatus*.

1430

1st. Intersect
10.8 - 11.6
Rock in stream



Sept. 15 - About 10' cross-bedded ss.
Sept. 15' - Section in creek beginning 5' lower than old mill on at 1050'
0-1 alternating dark sh, green (olive) sh + irregularly bedded ss. 3' from base is a conglomeratic layer with broken fossils. The uppermost layer is 2' of hard calcareous ss. with *Sp. mucronatus*.
Following this bed are 4' dark sh with a thin ss band (3") about one foot from top. This dark shale is thin flakey and distantly granular from rather coarse sand grains. Ripple-marked. The ss is hard, greenish gray, with brown weathering patches. In base of alternating ss + sh. of the upper 20' occur ostracods. The upper half of the 20' bed is in light green shales. They come to dark sh 4'. Then a layer of ferruginous rock 10" thick. Above the ferruginous bed are green knotty shale for 5' then dark shale with Hamilton fossils *S. mucronatus*, *Camanopecten*, *C. coronatus*, large *Grammysia*.
Following the fossiliferous shale are heavy bedded coarse ss with a great abundance of plant stems. The ss. is blue grey in color. Succeeding this ss. are dark and green shales and knotty green sh. The dark grey and green almost always occur together. I think the passage is dark grey to green eastward. Then perhaps the greens go to reds. At the bank

10.8 - 11.75

above the heavy ss are perhaps 199
100' of alternating sh. & ss. This
section is opposite 2nd house
3 close together and is 0.95 miles
from intersection. The top of the heavy
ss. is at about 1120' in stream bed

1431

Sept 15² - Hand levelling begun at 1700'

0-1 - In the lower 1 1/2' of shale
and thin ss in the shale were
found *Protolapidodendron* a, *S. tullius*
a, *Encrinurus* a, *Tentaculites* c. In

T. carinatus

the 3' of ss above the sh. *S. tullius*
was common. *Strommysis* sp.,
Pal. perplana. There are 4' of ss

1-2 - with *S. tullius*, then 2' shale, 1' ss,
2' shale & ss, in this latter bed
was seen *S. granulosa*? This
S. granulosa bed is in calcareous ss

2-3 - ~~that~~ The bed with *S. granulosa*
is followed by 3 1/2' of bluish shale
with small clams.

ss 11'

L. diversa, *Tentaculites*, *Glossites*?,
Palaeonilo. In the calcareous ss
above this shale was found

green
sh
ss

6'

Sp. mesastialis. Above this is 4 1/2'
dark sh. then 3' of ss. Then green
sh & thin ss. for 6' and the 11' more

ss

3'

of ss. with one shale band 2' thick
at about 5' from bottom.

3-4

dark
sh

4 1/2'

Above this ss. are crossbedded
sands to top of hill behind house.
They go up to 1790'.

calss

1 1/2'

3 1/2'

sh

sh + ss

2'

ss

1'

ss

4'

ss

sh 1/2'

Lower 20' of this section almost certainly is
the vitalina zone.

Sept 15³ - Along old road up Mill Creek. Hand Drilling begun at 1235'
0-1 - 2' green knotty shale rest covered

1432

1-7 - rather massive, light gray and cross-bedded ss.

7-8 - very dark flaky sh. with interbedded ss. 8-9 - flaky shale with interbedded ss. Half way between 7 & 8 is a 3" fossiliferous bed with *J. carinatus*, *S. mucronatus*, *C. coronatus*, *S. tullius*, Mottville sp.

9-10 - The rock becomes thin platy ss. At bottom here was found a loose slab abounding in *N. sub-alata*.

10-11 Thin platy ss with *S. mucronatus*, *S. mesastriolus*?

11-12 - same with *S. erectum*, *S. mesastriolus*, Mottville sp., *Gon. ham.*, *S. granulatus*. At top of this interval

12-13 - at base of this interval is a 6" bed abounding in small quartz pebbles. This is followed by another 6" span of thin dark arenaceous sh

13-16 - same dark sh. with *J. carinatus*, *C. coronatus*, *S. capillaria*, Mottville sp. The very top becomes thin ss. with *J. carinatus*

16-19 - dark thin flaky argillaceous ss. *J. carinatus* at bottom.

19-20 - same lithology but halfway up in argillaceous ss with *J. carinatus* a, *S. pennatus*. A little higher *S. tullius*, Mottville sp.

20-25 - dark flaky arenaceous shale.

25-31 - covered

31-32 4' of massive sand

56

X

pebbles

Platy ss

11'

32'

3 1/2' Green sh

Covered

184
1635
1419

light grey ss.

32-36- covered. Between 36 + 37

comes dark grey shales with

O. undulatus, *Gon. lam.*, *P. patulus*

G. bisulcata, *Sphenotus* sp. 1433

Leiopteria, *G. cuneata*, *Orbiculoidea*

There are about 4' of these shales.

Some 25' above these shales are
10-15' cross-bedded ss.

Goldring circular bog
appeared in 1924 (not '23)
as stated.



Blmsh 6'
 Green beds 14'
 Black sh 3'
 ss 6'
 greenish dark sh 9'
 ss 11'
 Heavy ss 2'
 Green sh 4'
 heavy ss 5'
 ss 5 1/2'
 covered 16'
 Green sh 5 1/2'
 covered 5 1/2'
 dark sh 10'
 dark sh 16'
 dark sh 15'
 coarse dark grey + speckled ss 6'
 Black sh 11'
 Heavy ss 11'
 dark sh 5'
 ss 11'
 dark sh 5'
 2'

Sept. 16-

Section along Gilboa - N. Blenheim road from intersection of Jefferson road south to Mine Kill.

202

1434

Hand levelling begun at 890'-

0-1 - at top of this step is cross bedded ss of Sept. 15.

1-4 - covered

4-5 - lower & 2' in heavy-bedded greenish grey ss. rest in flakey dark grey sh. At contact of sh + ss were seen:

A. hypa a *A. spiniferoides*
Cyrt. ham. a *S. mucronatus*
M. concentrica *C. congregata*
C. coronatus.

In the dark shales are *O. parvula* + *P. lanceolata*. These dark shales are about 5' thick but by dip the top of the shale falls in top of 4-5 interval. In the sh. were seen also:

C. coronatus, *S. mucronatus*.

5-6 - a 1' bed of hard massive ss at top it abounds in *C. coronatus*

Rest of interval in dark flakey sh. becoming sandy at top. Discrepancy of section and H.Z. due to dip.

6-8 - heavy-bedded ss, light grey in color

8-10 - heavy bedded light grey ss with ~~thin~~ thin bands of black shale between the heavy beds. The uppermost layer is very light grey quartzite about 2' thick

10-11 - black flakey shale

11-13 - coarse grey ss, heavy bedded for 6', then comes three feet of light grey, speckled sandstone

The upper surface of which has many animal tracks. The upper 2' of the interval is in dark

150'

shaly ss.

203

13-15 - flaky sh. passing into platy ss. In the platy ss. of 14-15 were seen:

G. circularis, *Leiopteria*, *Camarotoechia*, *C. coronatus*, *S. mucronatus*

1435

15-16 - Same, 1' from top is a one foot bed of calcareo-arenaceous bed abundant in fossils:

C. flabellus, *M. concentrica*, *S. mucronatus*, *S. granulosus*, *Cyrt. lam.*, *Lingulodiscina*, *Fenestellids*, *Mottville* sp., *Don.*, *Schuchertella*

About 4' below the *Corvellites* bed *Camarotoechia* is abundant - here were seen: *G. bisulcata*, *O. undulata*, *C. coronatus*, *N. subalata*, *M. quadula*?, *G. erectum*

Just below the *Pterinea* bed is an abundance of a modiomorphoid clam seen before just above the red-beds on Mohlganter hill. Above the *Pterinea* bed are about 5' more of these dark arenaceous shales with a decidedly dark green cast. Has a large coarse ribbed *C. coronatus* & *Grommopsis*. Much sandier rock than below.

16-18 - greenish & gray dark sh & ss. thin bedded ss.

18-19 - covered

19-20 - green crumbly sh.

20-23 - covered

23-24 - lower half of step, greenish thin bedded ss, upper ~~part~~ grey heavy bedded ss.

24-25 - very heavy massive, coarse light grey ss.

Upper 1/2' green sh.

25-26 - 4' of green sh and ss, 2' bed of massive ss.

26-27 - at bottom 1' black sh., 1' massive ss. ~~then~~. Rest is dark + greenish sh. 204

26-28 - Same sh.

1436

28-29 - heavy-bedded light gray ss.

29-30 - This ss is succeeded by dark flaky sh. with ostracods. There are about 3' of the blackish sh. then comes rather greenish sandy beds, weathering mottled reddish + greenish.

30-31 - sandy green beds. At top of interval is a layer of greenish calcareous rock with *Camarotoechia* + *Sp. mucronatus*.

31-32 smooth and brothy green sh. & ss.

32-33 - heavy-bedded bluish gray ss.

0-1 Sept. 16¹ - Handlevelling about - 1115' Dark, irregularly fracturing arenaceous shales with *S. cuneata*, *Pal. mureta*, *Mottville* sp., *S. granulosa*, *S. arcuata*, *J. carinatus*,

1-2 - same sh.

2-3 - same shale with some platy ss.

3-4 - same thin shaly ss. as top of

3. Here were seen: *S. mucronatus*, *J. carinatus*, *Mottville* sp., *S. cuneata*, *C. coronatus*, *S. cuneata*, *S. arcuata*, *S. erectum*, *P. radiatus*.

4-5 - same dark shale. *J. carinatus* sp. *mucronatus*,

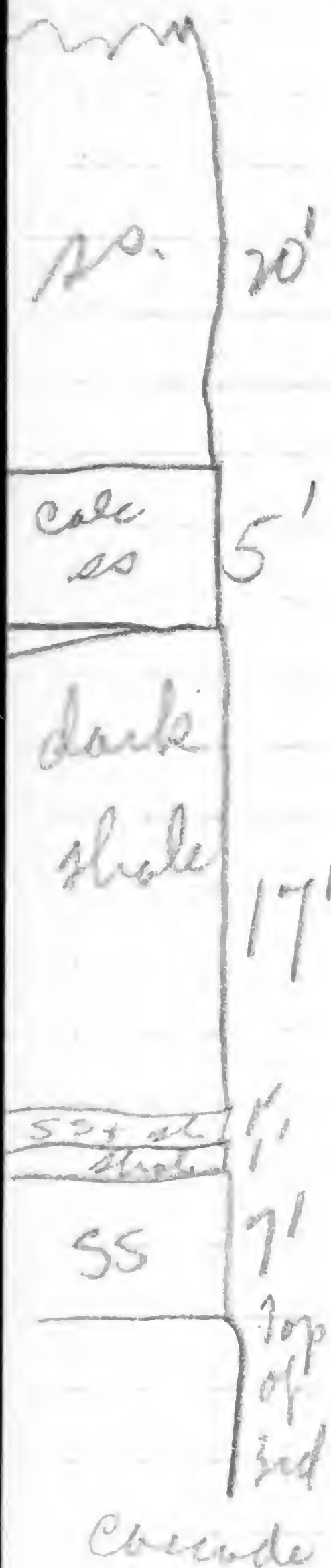
Sept 16² - At 1170' - comes 11 feet of platy coarse, blue gray ss.

Sept. 16³ - at 1230' 5' of dark, cross-bedded shaly ss. passing up into 1' of knotty dark rock, with greenish cast. These rocks and the shales of Sept. 16' are a dark brown identical to the Ludlowville at Richmondville. Below the road here are 5' more of the cross-bedded ss. The bottom would then be about 1225'.

1437

Sept. 16⁴ - Minekill Falls.

At bottom is a deep gorge with vertical walls. Mostly in arenaceous shales. There are 4 cascades. The fourth is beneath the bridge and the top of the third is easily accessible. The third is formed by thin bedded platy ss. abounding in *S. tullius*. Above the *S. tullius* are 7' of bluish grey ss. This is succeeded by 1' of dark shale and then 1' interbedded calcareous ss and interbedded ss. The thickest ss is 1/2'. This contains *I. carinatus*, *S. mucronatus*, *C. coronatus*, and *Centronella* very abundant. The *Centronella* bed is about 1' thick. Above this comes dark shale. 1 1/2' above the *Centronella* bed *Tropidoleptus* is abundant. The dark shale in its middle part abounds in *Mottville spinifer*. Other fossils are: *S. mucronatus*, *S. carinatus*, *O. undulata*. At the top for about 3' there is a small *Leiorhynchus* very abundant. With it were seen *S. cuneatus*, *Pal. constricta*. Above the shale is a 5' bed





of hard calcareous ss., 206
coarse grained breaking into
flat squarish blocks. 1438
are 20' of heavy bedded ss. The top of the 14th falls at 1071'
near the top of the blue, ~~the~~ ss.
Sept. 15th - at 1220' - 10' coarse, blue grey
heavy-bedded ss.

The locality about $\frac{3}{8}$ mile S of 207
Bates visited with Chadwick
corresponds to the top of the
Mine Kill Falls. The same small
Leiorhynchus occurs there. 1439

Sept 19 - Outcrop on bank of
Schuylkill River at about 935'.
~~At the~~ the river are three feet of
shaly ss passing into a 2' ledge
of hard irregularly bedded ss.
with fossils: *S. cuneata*, Mottville
Sp., *S. depressus*, *Orbiculoidea*,
small *Leiorhynchus*, *Leiopteria*.
Above this ss are $1\frac{1}{2}'$ of dark
flaky sandy shale with small
Leiorhynchus, *S. cuneatus*, *Leiopteria*.
This is followed by about 6' of
hard irregularly bedded heavy
bedded ss. breaking into thin
rectangular blocks with curved
markings. This is the same ledge
forming the 4th falls on the
Mine Kill. Above this bed on the
West side of the road are heavy-
bedded cross-bedded ss.

Sept. 17' - Sandstones that form
the brink of the 3rd falls at the
Minekill. Dark blue grey; plant
stems.

Sept. 17² - Large quarry showing
some 30' of very heavy-bedded
light grey, blue grey & green ss.
Between some of the ss. beds
are thin layers of jet black
shale. Plants abundant. The only
fossils seen were *S. erectum*,
Mottville Sp., *S. tullius?*, and
I. carinatus. Reversals of dip

due to cross-bedding & storm roller layers or
Channelling are prominent.

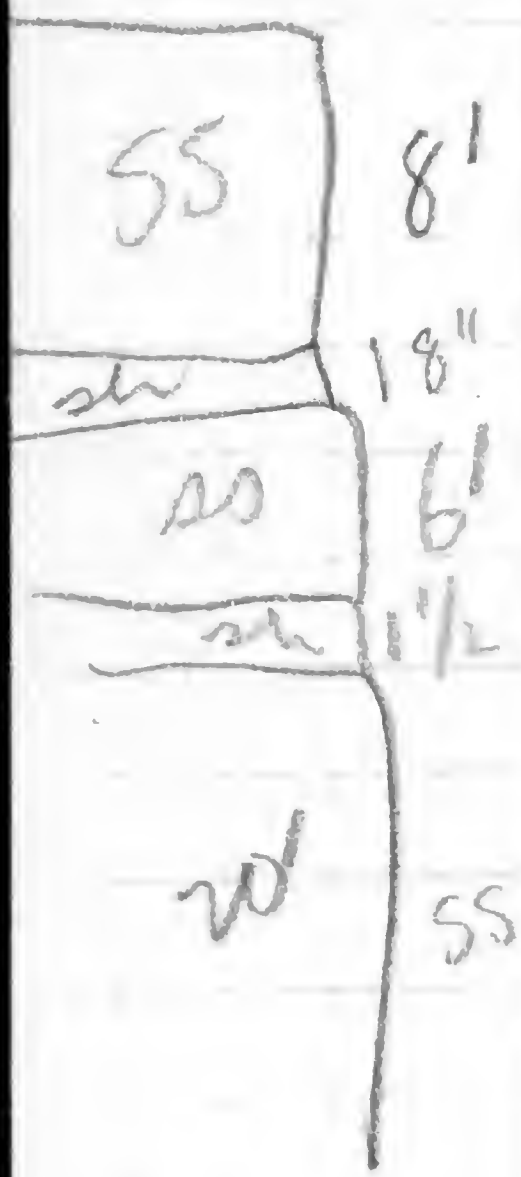
208

1440

Sept 17³ - 5' layer of heavy bedded ss. middle portion calcareous & breaking in angular blocks.

Sept 17⁴ - Below Silboa dam - section begins about 990' - Section E side river. Lowest rock is very heavy-bedded massive ss. which lies below the middle stump quarry. There are 17' of the hard massive ss. below the dam, and 3' above the dam making 20' in all. Above the ss. is 1 1/2' black shale, then 6' heavy bedded & cross-bedded ss. then 18" black shale, and above this heavy irregularly bedded ss. 8'. Above this are about 15' of dark and green shales.

Sept 17⁴



Sept 17⁵ - Plattenkill falls. -
Hand levelling from Schoharie River at
940' -
0-13 - covered
13-14 - upper 2' in heavy-bedded ss.
14-15 - Lower 3 1/2' " "
Upper 2' in dark grey arenaceous
shale or argillaceous ss.
15-16 - Thick bedded platy ss. This
extends up in the bank for
fully 9' more but is covered in
stream.
16-18 - covered in stream bed.
The base of the falls is at the
top of 18 or at 1033'.
18-20 - Thin bedded shaly ss. At
very top are small concretions

or storm-rollers. 709
 20-23 - At top of 23 is top of falls
 all in heavy-bedded grey ss
 having plant fragments. At bottom
 the ss has storm-roller structure 1441
 23-25 - same ss but much thinner
 bedded and rather platy.
 25-26 - same platy ss.
 26-27 - 3' more of platy ss - rest in
 heavy-bedded storm-roller ss.
 27-28+1 - same cross-bedded and
 heavy-bedded ss.
 28+1 - 29+1 - 18" of black shale. Then
 about 30' heavy-bedded ss above
 stream.

Heavy ss	30'
Black cross + storm roller ss	18"
platy ss	9'
Heavy bedded ss	19'
Thin bedded shaly ss	16'
covered	11'
finer platy ss	3-5'
shaly ss	12'
heavy ss	2'
	3'

Sept 17⁶ - 2.6 miles S of Manorhill bridge
Green, thin-bedded ss.

Sept 17⁷ - 0.95 S. of Manorhill bridge -
Massive heavy bedded green ss 10' above
road and 25' exposed.

Sept 17⁸ - 0.85 mile S. of Manorhill
bridge - Green ss with plant stems

1260

$$\begin{array}{r} 1070 \\ 116 \\ \hline 1186 \end{array}$$

$$\begin{array}{r} 15 \\ 1186 \\ \hline 74 \end{array}$$

10701

September 18 -

210

Manorhill Falls.

Handlevelling begun at 1070'

0-8- Rather thin bedded, greenish

grey ss. much cross-bedded. 1442

8-9- Green shale, knotty + smooth
interbedded with green ss

9-10- Lower 2 1/2' in green sh. upper
3' in heavy bedded, cross-bedded ss.

10-11- " " " " "

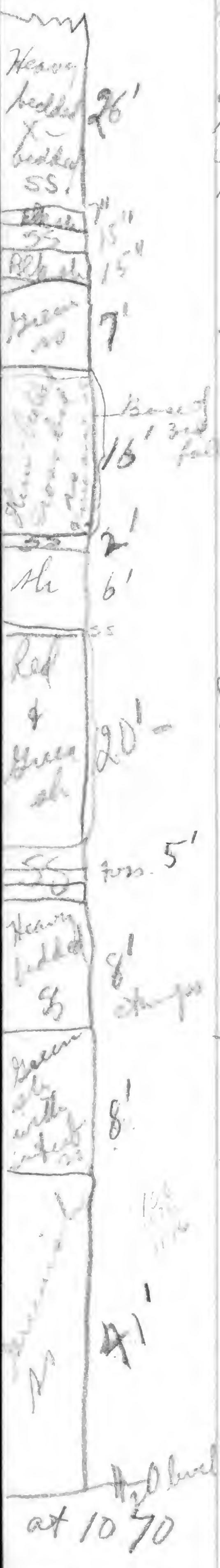
This is the horizon that carried the
upper bed of stumps.

11-12 - 1 1/2' hard massive bed of
ss. Then comes a 1' layer on the
surface of which are numerous
fossils. *G. erectum*, and what
appears to be *S. mesastriatus*. Then
follows 3' of hard, grey ss. forming
a shelf beneath the 1st cascade
from the lake.

To the top of the second falls there
are 20' of green and red shales.
This fall was not measured
owing to the impossibility of climbing
it. The brink of the falls is a ledge
of ss about 1' thick. About 3' below

~~Handlevelling~~
this ss we saw a small globular
Leiorhynchus.

Handlevelling from brink of mid falls
0-1 Smooth green and dark sh
with occasional thin ss. beds.
Saw 2 *lingulas*. These shales
go about the step about 1' and
just below a heavy ss. were
found ostracods. At top of 1 is
concretionary layer with calcareous
nodules, clay balls + fish-spines.
1-2 - One foot in green + dark
shales. Then follows a 2' bed of
hard massive ss. and the



rest of the step is in thin 211
bedded ss. This is the beginning
of a thick interval of of very
cross bedded ss. It looks as
if gigantic blocks had been thrown
together, better shelter. 1443

2-5 - same cross-bedded ss,
extending to base of 3rd falls
where there are flat heavy massive
beds at the top of the interval. This
is 3' up in the last falls. Saw no
fossils

5-6 green, thin and heavy-bedded
sandstone, some cross-bedded.
This forms a ledge under the steps
of the private house.

6-7 - About 1' above ~~top~~ top of 6 is
a ledge containing a large number
of clam shells suggesting
Sphenotus solenoides, but without
the pallial marks. Along with
the clam are rare specimens
of a small Leiorhynchoid
brachiopod. Following this bed
is another foot of green ss. then 15"
black shale, heavy ss. 15" and finally
7" black sh. with fragmentary fish
remains.

7-12 - heavy and cross-bedded ss.

Sept. 18' - 6' greenish grey ss.

Sept 18² - In bed of stream are 3' of
mottled green & red ~~beds~~ arenaceous
shale, quite massive and not
showing bedding. It is full
of light brownish calcareous
concretions, the solution of
which gives the rock a pitted
surface.

Then follows 5' of green arenaceous 12
shales, thin in thick beds. The lowest
surface in contact with the basal
red & green mottled bed is ¹⁴⁴⁴
sun-cracked. About 3' above the
base of the green beds is a layer
abounding in Debrataloid brachiopods
and ostracods. Then follows about
4' of dark flaky ss. with a 10" magnesian
bed at base. This flaky rock weathers
to red.

Sept. 18³ - In the road at 1560'
comes a calcareo-arenaceous bed
abounding in fossils: *D. carinatus*, *D.*
S. mesastialis C, *C. gregarius* C,
Gon. ham., *Pal. constricta*, *Actinopteria*,
fragments of *Pterinopecten*. Below this
bed are 10' cross-bedded, coarse
grained ss. with *S. mesastialis* at
the bottom. Above are 15' of thin-
bedded, cross-bedded ss.

Sept. 18⁴ - coarse red-weathering ss.



Sept. 19

Section at dytaka

213

1070

Location on Mt. Royal N62E - 12°

" Mt. N.E. Devosago falls S55E - 12°

Handlevelling begun at 10:45

1445

1-1 - at the level of the lake were of green ss. weathering red on the surface, this is followed by 2' dark green shale and this is followed by greenish ss weathering red.

1-2 - In this step are 3 1/2' of the same thin bedded red weathering green ss followed by 2' of mottled red & green sh. probably was all green.

2-3 - At bottom 2' thin bedded ss greenish but weathering red, the 1' mottled red & green knobby shale, then 1 1/2' red shale.

3-4 - at bottom 1 1/2' red, thin bedded argillaceous ss, then knobby and thin bedded shaly ss, the 6" hard grey ss pitted from solution of limy nodules then comes 1' of mottled shale.

4-5 - Lower 3' in greenish grey irregularly bedded ss. Upper 2 1/2' in green sh. having limy beds, ostracods and fish-plates.

5-6 - lower 2' in same as upper 2 1/2' of 4-5. Then 3 1/2' heavy bedded argillaceous ss and some thin interbedded green sh.

6-7 - Lower 3' in greenish ss, with 6" shale at bottom. Upper 2 1/2' in smooth green sh. mixed with dark shale. About 1' above the base of the shale were found a smooth Leptatuloid and a small clam together with peculiar spiral shaped fossils.

7-8 - Lower 3 1/2' in the same green shale. Upper 3' in thin bedded green ss. with thin layers





of interbedded shale. One of the 214
upper layers is beautifully mud-cracked.
One foot below top is a wrinkled
phyllite layer about 1" thick.

8-9 - 1' of shaly, irregularly bedded ss with
small *Tachurus* markings. Then
4' knobby and smooth green shales.

9-15 - covered. This brings us to the
rear of the intake building where
there is a high cut.

15-16 - 2 1/2 feet of green shale, weathered
red at bottom, 1 1/2' of knobby green ss
and then 1' of dark greenish shale
capped by 1/2' ss. with mud cracks.

16-17 - 3 1/2' of heavy-bedded blue grey
ss. with scattered brown spots. At
top are 2' of flaky dark shales.

17-18 - at base are 1' of dark shales
with an abundance of the peculiar
spirals seen at 6-7 with the clams.

Just above this layer the shale is
phyllitic. Above this shale is
rather heavy bedded, coarse, blue
grey ss. clod. balls + plant stems
abundant. Excellent *Protolipodendron*

18-19. - same. 19-20 - same; 20-21 + 3
same ss. This makes a total of
24' of this ss. exposed behind the
intake building. The latter is at 1150'
above sea-level. Going up road the
heavy ss. is exposed from 15-22.

Then there is a covered interval
22-24 - covered.

24-29 - same sandstone, ~~but at top of~~
~~28 to 29 and running in 29-30 are~~
fossils in a concretionary bed.
The ss. is very coarse, and has
pebbles of vein quartz & quartzite.
One of the latter 2" in length
was seen.

J. lamellata r *Sp. mesastrialis* 215
Centronella r *C. gregarius*
J. carinatus *Pal. emarginata*

29-30 - same ss. Here at 30' 1447

section on the road ends, but to the west in the woods 27 feet more are exposed, but it appears more thinly bedded.

30 - 43 - 3' - covered in road.

Between 41 + 42 were about 4' of thin-bedded ss. There is a covered interval of about 62'.

Handlevelling from base of outcrop at 43-3'

0-4 Lower 2' in coarse ss. then follows a 15" bed in which fossils abound:

Pal. emarginata, *A. boydi*, *Sp. mesastrialis*, *Bor.*, *C. conglobata*, *Pal. plana*, *C. gregarius*, *Leopetia*. The upper part of this bed is bluish shale and has *J. carinatus*, *P. lirata*, *S. mucronatus*.

After the fossiliferous bed dark sandy sh. comes in with same fauna.

17-2 - same dark sh. near top of step sand *P. lirata*, *Camarotoechia*, *S. erectum*, *Sp. mucronatus*.

At very top comes a 2" sandstone abounding in *J. carinatus*, *Sp. mesastrialis*, *Pal. emarginata*, *C. large*, *Stromyria*, *Sp. mucronatus*, *Leda diversa*, *S. spectrum*.

Above this are 3' dark shales and then a 3' bed of massive ss. with *S. mesastrialis*, *Pal. emarginata*, *J. carinatus*. Above this ss. bed the rock is covered in the woods for 15'.

Then comes cross-bedded ss. At the base the rock is 2' of massive ss. then the x-bedded ss. for 10'. Then 8' covered. Finally there

30-43 are 5' steps along road. This is at intersection of old road & cutback rd.

16 ft
 5 ft

Heavy bedded ss	27'
Covered	8'
x-bedded ss	10'
massive	2'
covered	15'
ss	3'
dark sh	3'
dark sh	8'
ss	15'
ss	2'

are 27' of heavy bedded ss. 216

Intake located 1.3 miles from crossing
over Bear Creek and at 1150 ¹⁴⁴⁸ elevation.
~~It is 1 mile N. of the intersection of~~
intake road & highway is one mile
exactly from Bear Creek bridge.

Sept. 19'

At Fridge over Bear Creek -

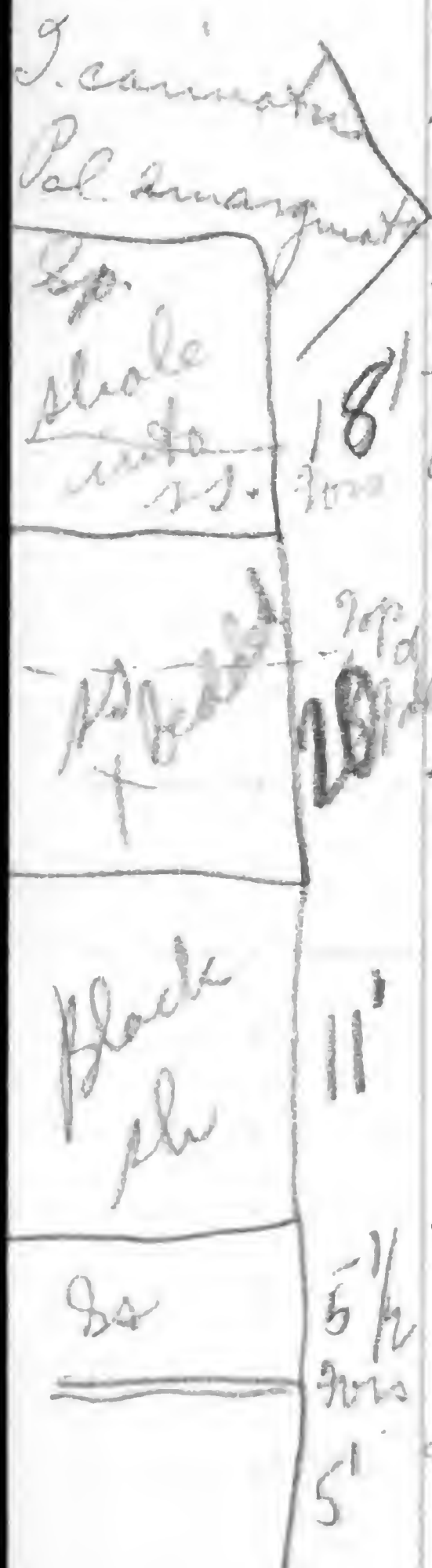
0-1' - At base of section in
midst of thin-bedded ss. are
scattered lenticular layers of
pebbles in which fossils occur:
Sp. mesastrialis, Camarotoechia.
At top of interval fossils abound
in a 6" sandy and limy layer.
Sp. mesastrialis, Camarotoechia,
Actinopteria, Sphenotus.

1-2 - in the X-bedded sandstone
lying on the fossil bed Actinopteria
is common. 3' above base of step.
is another fossil bed 4" thick
with Sp. mesastrialis, Sp. mucronatus,
C. gregarius. This is followed by 1 1/2'
thin bedded ss. + that by 1' shale.

2-3 - Black fleshy shale with
Camarotoechia.
3-4 - Lower 4' are shale + ss
interbedded. Upper in X-bedded ss.
4-7 - X-bedded gray ss.

7-8 - Sandy shale - 2' from
bottom is a 1' bed of
mesastrialis and above this
are 15' of shales passing into
thin X-bedded sandstone.

The lower 13' of this interval
are dark shales and 5' of ss.
This upper fossil bed may be
the one at the intersection of
Sept. 19. as it has C. complanata



This upper bed with *C.* 217
complanata comes at about 1190.

1449

September 20. -

218

Section along road to Grand Gorge -
Hand levelling begun at 1380 -

1450

Blue-green ss	27'
Green & red thin ss & sh	15'
red weathering gr. ss	5'
Knobby gr. ss.	1 1/2'
Knobby red ss.	2'
Knobby red ss.	3'
Knobby red ss.	10'
Knobby red ss.	10'
Knobby red ss.	5'
Knobby red ss.	5'
Knobby red ss.	9'
Knobby red ss.	55'
Covered	10'
Green ss	4'
Covered	22'
Light green ss.	15'
Dark green ss.	14'
Dark green ss.	15'
Dark green ss.	1-2'
ss.	24'
dark sh	6'
Dark ss	5 1/2'
Dark ss	11'
Dark ss	7'
Dark ss	10'

0-2 - covered.
2-6 - greenish grey rather heavy bedded sandstone. At base of 5-6 some a storm-rolled bed.

6-7 - same sandstone but 6" below the top is a 3" layer with fossils *C. complanata*, *S. mesastrialis*, *T. carinatus*, *C. greggia*, *A. boydi*, *Pgl. emarginata*, *Petroecania*, *Pal. marginata*. This bed pinches and swells, reaching a maximum of 10" in thickness.

7-9 - same rather heavy bedded sandstone.

9-10 This interval is wholly composed of fossiliferous sandstone. At the base is a calcareo-arenaceous breccia composed of sp. *mesastrialis* fossils are very abundant above this bed. *Sp. mesastrialis*. In the upper part the rock is rather shaly & has *T. carinatus*, *Camerozoechia*, etc. In the breccia a *Schuchertella* also occurs.

10-11 - The fossiliferous ss. gives way to dark, smooth flaky shales that have a greenish cast. These extend for about 6'.

11-13 - The dark shale is succeeded by heavy bedded greenish grey ss. in the bottom of which occur *Sp. mesastrialis*, *Camerozoechia*, *Sp. mucronatus*, also the ss. above the base clay balls occur also scattered fossils: *S. ~~stansburyi~~*, *E. cuneatus*, *T. cuneiformis*, *A. boydi*, *Cam. carinata*, *Camerozoechia*

Fossils seen loose

L. diversa

Chonetes (small)

Terebratuloid

13-15 - same ss. 219
15-16 - About 2' above base of this interval is a layer 1 1/2 - 2' thick of fossiliferous somewhat calcareous sandstone. - *Sp. mesastialis* is abundant. *C. complanata*. L451

16-17 - covered. The top foot of this interval is in shale and probably the whole interval is dark sandy shale. But it is succeeded by ss.

17-19 This ss is fossiliferous in first 5' were seen - *Leptotheca*?, *I. caninus*, *Sp. mucronatus*, *Sp. mesastialis*. In the second 5' - plant stems. The ss of this step were rather heavy, but even-bedded and of a bluish or greenish grey.

19-20 - Lowest 13' are in the same bluish or greenish grey ss. The upper 2' of this interval are in heavy bedded ss, but of a light greenish grey or light grey color with innumerable brown specks in it. This contrasts quite strongly with the positive color of the bed below. The lowest 2" of this grey ss have coarse sand, clay balls & plant remains.

20-22 + 2 - Same light green sandstone. At 21 - the section on the road is interrupted but there are about 8' of rock exposed above 21.

21-28 - covered. Between 27 + 28 came 4' of greenish thin bedded ss.

28-30 - covered.

30-31 - green and red mottled shale and sandstone.

31-34 - red + green sandy shale

34-35 " " " "

Top 3' appear to be in green rock

34-40 - Some red beds at top 220
in dark grey greenish beds Ostracods
& small clams are abundant.

39-40 are mostly greenish sandy
sh. & ss.

1452

40-41 - red weathering green ss.
now mostly red.

41-42 - red knotty sandy shale
suggests Whitnall's Red Vernon sh.

42-43 - 4' of the knotty red at the
base becoming mottled
greenish at top.

43-44 - bright green ss in heavy
beds & having a hackly fracture

44-45 - smooth red sh. for 2' then
knotty sandy red sh. for 3'.

45-46 - 2' knotty red sh. Rest
in smooth red sh.

46-48 - smooth red sh. ~~shown 48~~

48-50 - ¹ and knotty red
shale alternating in beds of 3 or 4'

50-51 - 3' heavy regularly bedded
red ss. originally greenish grey.
then 2' of knotty red sh. which
is followed by 18" knotty green
ss. 50-51 is in bank. ~~along~~
~~road from 50 -~~ are covered

51-55 in bank greenish ss weathering
red. and thin red ss and shales at
top of 55 are 2' of light bluish green
shales underlain by red shale

51-60 - heavy bedded greenish blue
ss. with abundant plants.



Sept. 20'

Stevens Mtn. Quarry -

Floor of Qy. at 1460' - There are ss. for 35' then comes a fossil bed at 1453'

1495'. This bed is about 1' thick. At 1508' comes 2' of fossil bearing beds with ss. between. Then comes 10' shale. After this 25' ss, then 20' shale and above that about 30' ss. The first black sh. has many fossils - Thus usual fully assemblage. 40 feet below the floor of the quarry are about 20' of green & red - & shale. These would extend to 1400'

Thin fossil beds at 1508' - there at Stevens Mtn. Falls.

650
1300
325
3/1625
548
100

Sept 20² - Devosago Falls - section extends from falls downstream for 650 paces. At the falls the lower 20 feet, at the time we saw it, are in knotty green and red arenaceous rock, the red color predominating. 5' above the water or 15' below the arenaceous knotty rock is a layer of hard ss. about 6" thick abounding in fish fragments. Above the shaly rock the water cascades over 10' of hard massive, heavy bedded ss forming brink of falls. And there are about 10' of the ss. above the falls. This is on the eastern side. On the western side are some 30' of ss. in the cliff a little below the falls.

Sept. 20³ - About 15' cross - 222
bedded ss. with *S. mesastrialis*,
T. carinatus, *Conularia*, *Camarotoechia*,
Spon. caninata, *Pal. emarginata*. This
locality is at 1210' at base **1454**
outcrop - At 1245 on new road to
Prattville are 15' of same ss.
here we saw *T. carinatus*,
S. erectum, *S. mesastrialis*

Sept. 20⁴ - About 15' of rock exposed
with the top at at 1280'. At the bottom
it is dark greenish gray but the
bulk of the rock is smooth red
shale and mottled green & red
shale. Undoubtedly it was once
all green.

Sept. 20⁵ - On top of hill at ~~1275~~ 1310'
About 6' of rock, smooth green
shale at bottom for 1' then
irregularly bedded ~~even~~ reddish
ss and chunky shaly ss. The
mottled green-red color of some
of this shows it once all to have
been green.

Sept. 20⁶ -

September 21 - Handlevelling 223
begun at 1230' at road intersection -
0-1 covered

1-3 - platy, cross-bedded ss., blue **1455**
color. Lower 5' had *Leptæna*, upper
5' had clay balls & plant stems.
3-4 - light grey heavy, irregularly
bedded ss. with brown specks.
Plants abundant.

4-5 - blue grey heavy bedded ss
with clay balls and fossils:
S. erectum, *T. carinatus*, *Mottville* sp.,
S. cuneatus. Of this fossiliferous ss.
there is about one foot. The rest of
the interval is in dark, flaky arenaceous
shale.

5-6 - same dark shale passing
up into moderately heavy-bedded
ss. of which there are about 2' at
the top of this interval.

6-7 - At base of this interval are
about 2' of the moderately heavy
bedded ss and it contains fossils
in the upper foot. Here occur
S. tullius, *T. carinatus*, *Cypriocardella*
sp. Rest of interval is in dark
sandy sh. *Pal. fecunda*?

7-8 - same sh. *Mottville* sp. 8-9 same
going up into ss. much of this shale
has the pencil cleavage

9-13 - blue-green moderately bedded
course grained ss. Above base about
3-4' of smooth greenish ~~shale~~
shaly ss.

Sept 21' - About 6' of rock top at 1275
about 1 1/2' irregularly bed, greenish
blue-grey ss, then 2 1/2' mottled
green & red sandy sh., then 3"
bed of ss with fish fragments
then 2' more smooth bed red & green

shaly ss. capped by 1' green 224
shaly ss.

Sept. 21² - 0.2 mile N.E. of house **1456**
521' are heavy bedded ss. This is at
the base at 1240'. It is X-bedded ss
mostly and at top heavy bedded ss.
The outcrop extends west for
0.1 mile. By barometer this is 1252'

Sept. 21³ - At 1220' in stream bed
comes 5' cross-bedded, thin bedded
blue-grey ss. At top were seen:
I. caninatus, *Mottville* sp. or *S. tullius*.
This ss bed is same, probably, as at
6-7 on road section. Above this ss
are 8' of dark shales, the lowest
3' of which weather into long pencils.
This is like the shale above the *I.*
caninatus bed at 1262'.

The contouring on the main highway
is all wrong.

The top of the sh is capped by 3'
of moderately bedded platy ss.

Sept 21⁴ - At 1st intersection occur
heavy bedded ss which join with
S165. Here at 1240' are heavy bedded
ss. with fossils *S. tullius*, *I. erectum*,
Mottville sp., *I. caninatus*. This looks
to me to be an upper Ludlowville
fauna. At about 1245 is a foot
of sandy sh. Then follow X-bedded
thin-bedded ss. with plant stems
and rare fossils: *Mottville* sp.,
I. caninatus, *Sphenotus* sp. The
top of this ss is at ~~1255~~ 1265.
Above this are 8-9' dark bluish-
green-grey shales.

87-521^{4a} ~~Sept. 21~~ ~~at #300~~ ^{#1303} - about 4' ss. 225
 with Mottville sp. & S. tellus, plants
 then follow 9. conatus, then follow about 5' of arg. 1457

sh. with pencil bedding at base and with Mottville sp. & S. tellus. This appears to be same sequence as in stream at Sept. 21³. These shales run to road going up over hill. The shale is not more than 3-8' thick and rises with the road.

Sept. 21⁵ - Going N of bridge at 1750' first 2' are in x-bedded sandstone then comes about 3' of shale, then comes 20' of thin bedded cross-bedded ss. with fossils S. mesastrialis c, Actinopteria. Above this 20' of ss. are 5' of thin bedded ss splitting like shale.

Below bridge there are 10' of thin bedded ss. Just below this is a one foot calcareo-arenaceous massive bed with abundant S. mesastrialis, big Actinopteria, S. mesacostalis. Below this fossil bed are 30' of cross-bedded thin bedded ss. Then a covered interval of 12'. This is followed by 12' of sandy shale having Pterinea at the top. Other fossils are: C. gregarius, Chonetes, Tentaculites, Pal. plana,

S. conatus

Thin bedded ss	5'
Thin bedded x bedded ss	20'
Fossils	
Dark sh	3'
Thin bedded ss	12'
Fossils	1'
x bedded	
Thin bedded ss	30'
covered	12'
sandy sh	12'

Sept 21⁶ 1.25 miles E of Ruth on N bank of Mine Kill & 10' plant bearing, x-bedded ss.

2340.
340.
~~2540~~
2000

240

shew

Sept. 21⁷ - ~~the~~ Hollow
sandlevelling begun in gully 2126
at 1415' 1458

0-1 at base some 3' soft dark
bluish grey shale and upper 2'
in a portion of a storm-roller
on east bank. Shale & ss. in
part equivalent

1-2 - heavy-bedded irregularly bedded
ss. with *S. p. mucronatus*, *Laciorhynchus*

2-3 - Lower 1' in X-bedded ss. rest
covered.

3-5 - heavy bedded ss.

5-6 - even-bedded, heavy bedded
ss. a little sh. Here we left stream
and went up west bank.

6-7 - covered; 7-10 - thin bedded, X-
bedded ss. with plants.

11-12 - covered. 12-13 - mottled red &
green ss & sh. This brings us to 1480'
14801-1486 - about 3' greenish sh.
at bottom and 3' X-bedded ss. at top.

Sept 21⁸ - 45 feet of thin-bedded
ss. with a 2' concretionary bed
2' above the base. *S. mesastialis* occurs 3'
from base of bed in the concretionary
bed: -

S. mesastialis, *Mucula*, *S. erectum*
T. carinatus,



Sept. 22 - Road section W. of N. 227

Blenheim - Section starts at 913-

913-920 - Thin bedded cross bedded ss.

920-965 - covered

1459

965-970 - heavy bedded ss.

970-987 - crumbly sandy shale with
O. undulata, S. bisulcata, Com. etc.

S. mucronatus, C. coronatus, at
987' comes a 3" calcareo-arenaceous
bed with C. flabellus.

987-992' - In shale just above
987' come - C. flabellus, S. mucronatus,
S. solenoides, Syn. lam., O. undulata,
P. maxima, N. oblongatus, S. granulosus
these were in 1' above 987'. In the
next 4' were seen C. coronatus

992-1002 - covered

1002-1019 - thin bedded sandy sh.

~~1011-1012 - covered~~

1019-1020 - black shale

1020-1026 - " " passing
upward into thin bedded - x-bedded
for about 2' in the ss.

1026-1032 - green brachy, shaly ss.
culminating in hard green ss.
at 1032.

1032-1033 - green brachy sh.

1033-1037 - black shale with thin
sandstone bands having fossils.
The ss is blue grey like typical
Ludlowville: Astracids, C. congregata,
S. mucronatus, plants, S. erectus.

Cyrt. ham., C. flabellus

1037-1044' - moderately heavy bedded
irregularly bedded ss. light greenish
grey in color

1044'-1052 - flakey sandy, dark
grey sh.

1052-1055 - ~~shaly~~, shaly ss.
thin bedded ss.

1055-1057 - green sandy shale

1037-1044'

1057-1059 - heavy bed of ss 228
10" thick, sh and ss for rest of
interval

1059-1067 - very heavy bedded ss. 1460

light greenish speckled ss.
1067-1078 - green sandy shale with
occasional layers of ss.

1078-1083 - green thin bedded, shaly
ss.

1083-1088 - green sandy shales,
knotty at top. Pitted from solution
of ls. nodules.

1088-1098 - Heavy bedded greenish
grey ss. with interbedded arenaceous
shales abounding in plant material

1098-1108 - covered

1108-1110 - lowest 2' ss, then 1'
green shale, 1' heavy bedded green
ss.

1110-1115 - covered.

1115-1129 - lowest 5' in thin bedded
X-bedded light grey ss, then green
ss, 1 or 2', then massive green
ss. for rest of interval

1129-1136 - green, fine shale, slightly
arenaceous.

1136-1146 - ~~At about~~ Grey thin -
bedded ss with a thin layer of
black sh at base. At 1143-44
fossils occur: *D. debrayi*, *C. congregata*,
Mattville sp., *S. mesostriatus*?,
Cicoronatus sp., *Nyassa*-like clam,
On bank on side of road are
10' more feet of this ss.

1146-1244 - covered.

1244-1253 - thin bedded grey ss.
with *Nyassa*-like clam at base

1253-1283 - bluish grey arenaceous
shales with fossils:-

O. undulata, *I. carinatus*, *Camerothechia*,
Gon. harr., *G. cuneata* c, *Pal. constructa*

B. leda, C. boothi, Modiolus **1461** 9
Sp. mucronatus, Mattville sp. The
upper 10' are sandier and harder
than below. 3' from base of
interval came a thin quartz
pebble bed.

1283-1343 - covered.

1343-1351 - grey ss, upper part hard
thick bedded.

1351-1396 - covered.

Boulder in stream showed
fish fragments, *D. mucronatus*,
large *Schizophoria*, *Atrypa* c.
clay balls & pebbles.

In stream - 1246-1251 - heavy
bedded platy ss. Above this ss
comes 2 feet of shale. Then
the rock is covered for 22'.

At 1275 come **22'** of bluish grey
shales. At about 1280 we found
G. cuneata c. This is the same
cuneata bed as on the road at
1275-1283. Above the shale in
gully is a 3' storm-roller bed.
Then platy ss. for about 10'.
Then there are 37' covered. Then
81 of heavy bedded ss.

1347-1355 heavy bedded ss.

1355-1382 - covered, 1382-1387 -
heavy bedded, massive, light
grey ss. in thick massive beds.

Continuing section in road:-

1396-1441 - covered.

1441 - 1446 - hard light grey, massive
speckled ss.

1446 - 1493 - covered

1493-1507 - heavy bedded ²³⁰ 1462
grey ss.

1507/1534 - covered

1534-1541 - heavy bedded grey ss.

1541 - ~~1611~~ 1611 - covered at 1602 edge
bridge over gully.

1611-1630 - covered.

1630-1631 - platy ss.

1631-1636 - at bottom 2' of hard
calcareous arenaceous rock abounding
in *S. fullius*, *I. cuneatus*. One
possible *Centronella* was seen but
it may be a young *Tropidoleptus*
S. mucronatus. Upper rock is shaly
ss. with some fossils and capped
by 1' ss.

1636-1641 - covered.

1641-1651 - dark flaky sh at base
becoming ss at top.

1651-1666 - thin bedded, x-bedded
grey ss. with a heavy one foot
layer on top with fossils:
S. fullius, *I. cuneatus*. The ss
is very coarse-grained.

1666-1701 - covered.

1701-1716 - thin bedded, x-bedded ss
Top very thin bedded and greenish
blue.

1716-1718 - covered. 1719-1721 - 2' grey
ss. ~~1718-1719 covered~~ 1718-1743 -
covered.

1743-1758 - at bottom cross-bedded
thin green ss., near top a little
green shale and at top a one foot
massive hard irregularly
bedded ss. Probably 4' of the shales

1758-1778 - cross-bedded greenish
ss.

1778-1788 - covered. 1788 -

1788-1795 - thin bedded greenish
ss.

1795-1797- green, lumpy ss. 1463 231
1797-1802- ' ss
1802-1806- Very dark grey, sandy sh.
1806-1811- covered

1811-1818 At base about 7' red shale
and thin beds of red ss. This is
directly in front of the house at
1845-!

1818-1832- scattered outcrops of
thin bedded green ss.

1832-1855- covered

1855-1872- heavy bedded, x-bedded ss.

1872-1877- covered

1877-1889- Lower 4 foot in green,
smooth shales, next ~~two~~
two feet in red shaly ss.
Rest of interval in smooth
flaky green shale & ss.

1889-1900- covered; 1900-1903-
green ss.

1903-1922- covered

1922-1928- red ss, rather coarse
grained.

1928-1940- covered; 1940-1942- ~~bed~~
bed of red ss.

1940-1955- covered.

1955-1965- This outcrop is on the
road going south over the top of
the hill. Green shaly ss. weathering
red.

1965-1980- covered. 1980-1994-
blue-green grey ss. with plants

1994-2002- covered. 2002-2004-
grey blue ss. with:

S. mesastrialis
P. impecten, a
S. mucronatus
J. carinatus

Pal. emarginata
A. boydi
C. gregarius

Sept. 23 - Roadway east of 233
North Blenheim -

1464

791 - 1210 - covered

1210 - 1215 - heavy bedded, speckled
ss.

1215 - 1230 - Fifteen feet of dark crumbly
arenaceous shales that become
rather sandy in the upper 3 or 8'.
~~From~~ In the first 10' of this shale
a small plicated trebratuloid is
abundant.

1230 - 1232 - heavy bed of ss about 22"
thick

1232 - 1248 - green and dark grey sh
with Ostacods

1248 - 1252 - Hard heavy bedded ss.

1252 - 1256 - dark arenaceous sh.

1256 - 1268 - In bank come 10'
of thin bedded, X-bedded ss.

1268
345
1612

In gully beginning at 1552

1552 - 1572 - light greenish grey
heavy bedded ss.

1572 - 1575 - knotty green sandstone

1575 - 1586 - coarse grey ss, with
stom - roller structure.

1586 - 1592 - A heavy bed of ss with
some knotty green from 0' - 1' at
base. The ss is light greenish
grey in color.

1592 + 1597 - about 3' of black shale
smooth, passing up into
heavy bedded ss.

1597 + 1617 - heavy-bedded, X-bedded
ss. some of the beds are very
thick

1617 - 1628 - smooth dark greenish
grey shales

1628-1663- Very heavy bedded 234
massive bands tone, greenish
light grey.

1465

1663-1673- covered. At 1673 is bridge
over gully.

Sept. 23¹ - At 1780' - There are 15' of
lumpy green & red mottled sandy
sh., 5' at the bottom lumpy.
Upper 10' are in smooth green &
red sh.

Sept. 23² - Green ss. and red and
green smooth shales extend in road
for 25' above 2025'.

Sept 23³ - Red ss. ledges up to
2140 - Gray ss. in hill up to
about 2200'. Saw no fossils

Sept. 23⁴ - In field next to highway -
ledges begin about 2110'. These ledges
of rock extend up to 2210'. The rock
is all blue-green grey cross bedded
ss. with plants, except the summit
ledge is massive light grey ss.
These ledges extend also on the
east side of the road protruding
from the south faces of Mt. Safford.
Here and also at 8233 not a single
fossil was seen, not even in loose
pieces of which there were thousands
strewn the fields

1530-

Sept 23⁵

235

0+2 - mostly greenish grey sandstone with a little shale

1466

2-3 - 2' of dark greenish grey sh, 1 1/2' of thin bedded green ss, 2' green shaly ss.

3-4 - heavy bedded grey ss.

4-6 - " " " " " About 4' from top of step in ss. are abundant specimens of Myasaa-like clam; D. dehayi

6-8 - To gully & stream crossing at 1570'. This showed platy shaly ss & sandstone.

On roadside at 1570' some dark arenaceous shales with peculiar Trebratuloid at the base of the outcrop, with it occurs Bon. ham., D. lectum, S. teneatus. In the upper beds about 2' above the Trebratuloids J. carinatus is abundant. The Tropidoleptus begins in a quartz pebble bed 2' above the Trebratuloids. Also in the upper beds ~~concentrated~~ which are shaly sands. Here occurred P. emarginata, L. perplana.

Above this are 5' more of dark sh.

Sept. 23⁶ - About 5' dark grey flaky sh with Ostracods. Elevation 1440'

7 gal
1 qt. } 165

Sept 24 - Went up West Kill 236
To gully on Hobart Sheet - All covered

1467

Sept 24 - At iron bridge over West
Kill, just below the sawmill &
houses, a 40' cliff on the east bank
where the stream makes a sharp
bend. The rocks are alternating
dark, smooth flaky shales and
heavy-bedded & bedded ss.

platy bedded ss	20'
Dark sh	18-20'
Black sand stone	16'
green ss crinoid	12'
Norman bedded ss	18-20'
ss	2 1/2'
shale ss	8'
ss	1 1/2'
Dark sh	3 1/2'
ss	2 1/4'
Dark sandy sh	6'
ss	3'
Dark sh	3' with Etnia limonite
Green sh & ss	4'

Section at the falls of the West Kill -
~~lowest~~ section begins at
cliff east of falls; first 4' in green
shales, sandy, with thin ss beds.
Then comes a 3-6" mudcracked limonitic
layer. The limonitic material extends
down into mudcracks in the green
shale. This is overlain by three feet
of black platy sh. green grey flaky sh
slaty and phyllitic. This is followed
by a wedge of ss, heavy massive
with fingering markings which pinches
down to 8 or 10" in the falls and
the south bank. In the 3' of shale
above the limonitic layer we
found abundance of Etnia on the
S bank of the stream on a shelf
about 25 yards east of the falls.
This is at an elevation of about 827'
although the contour gives it
at 820'. Above the 1-3' layer of ss
comes grey green sandy shales with
a layer of hard rock ss 3 1/2' from the
bottom and about 5" thick. Then
comes 2 1/2' hard irregularly bedded
sandstone dark grey in color.
Above the ss comes 3 1/2' of
black ~~shale~~ shale with thin
beds of ss. Then comes 1 1/2'
irregularly bedded ss followed

by eight feet of shale & 237
ss; very thin & bedded ss 2';
hard ss 1 1/2' and rest dark shale
Wedge forming the bulk of the 1468
falls is 2' of very hard massive
greenish light ss. with fucoidal
markings. This makes the height
of the falls about 30'

On the east cliff a wedge of
shale & thin ss. some 10'
wedged out between 2 ss beds
is about 25'. This is followed
by about 17' heavy-bedded
massive and storm-rolled ss.
in 8'-10' of this bed there is a
second falls some 40 yards west
of the first one

On the East bank above the
heavy bed of ss forming 1st falls
are 20' of hard massive rock, but
the upper 6 or 7' belongs to green
pitted beds which do not belong
to the ss forming the second falls
These upper ss have a pitted
surface & would undoubtedly weather
knobby. Above this green ss are
more ~~dark~~ light green, irregularly
bedded ss. The slope here is
mostly covered but the upper
6" is shown.

Then follows 16' of arenaceous
black shale with thin beds of
ss.

Following this shale is a bed
2' thick of heavy-bedded ss.
alternating with thin layers of
shale and abounding in
C. congregata, *C. syrtalis*, *I. carinata*
This fossil bed I believe is the
same as the one on the Mill
Kill above the falls. Above the

fossil bed are some 18-20' 238
 of dark shales, crumbly & sandy.
 with storm-rollers scattered
 thru. Above this are probably
 20' thin-bedded platy **1469**

~~above~~ The heavy storm-roller
 ss forming the trunk of the
 second falls and for 100 yds
 upstream. Here the confused
 bedding is shown to perfection
 Above this heavy ss are 12' of
 lumpy, knotty green ss. crumbly
 to small irregular blocks. The
 gorge upstream is fully 50
 high and shows the dark shales
 into the upper X-bedded ss.

Sept. 24' — Section on road leading
 S. from Keyser Kill: — Section
 begins at 1050' —

1058 — 1063 — dark grey arenaceous
 shale.

1063 — 1068 — shaly ss abounding in
 fossils: —

N. arguta a

S. alveata

Pal. emarginata

B. sulcomarginata

N. Arigueti

C. flabellus c.

J. cuneatus

D. deKayi

S. rotulum

C. tenuistriatus

1068 — 1085 — The shales contain
 essentially the same fauna till
 about ~~1084~~ 1084 where there is
 a bed of Calcareo-arenaceous
 rock abounding in fossils:

C. complanata

S. granulosa

S. mesatrialis type

C. flabellus

Son. ham.

S. alveata

A. princeps

L. macrodonatus

Pal. emarginata

N. arguta

- 1085-1095 - thin bedded platy 239
ss. with plants (grey ss)
1095-1105 - grey arenaceous shale
with thin platy ss beds about
4' below top. 1470
1105-~~1105~~ 1109 - same greenish grey
arenaceous sh. with
C. flabellus, *Cameroledia*, *Marguta*
P. lirata
1109-1118 - covered.
1118-1119 - dark crumbly shale
1119-1124 - platy ss + thin dark
flaky sh.
1124-1129 - same at bottom
becoming shaly sand above
1129-1139 - Coarse grey, moderately
heavy bedded, red staining, greenish
blue grey ss. with abundance
of plants. Fragmentary *Lyrinoplecter*
Pal. maxima
1139-1145 - Shaler dark grey ss.
saw no marine fossils
1145-1155 - covered
1155-1160 - thin bedded ss. in woods
1160-1169 - covered
1169-1178 - heavy bedded, x bedded
blue grey ss.
1178-1211 - covered.
1211-1227 - blue grey x-bedded ss.
1227-1231 - shaly thin bedded ss.
1231-1233 - 2' of massive calcareous
ss. that weathers to a soft brown rock
1233-1233 1/2 - shaly ss.
1233 1/2-1234 1/2 - largely hard
shaly ss with *C. syntaxis*,
large *Spinifer*, *Sp. mucronatus*,
B. nodocostata
1234 1/2-1244 1/2 - Greenish grey
arenaceous sh.
1244 1/2-1261 1/2 - green sh + ss.

Sept. 25-

About 20' coarse grey x-bedded ss. having plant remains & shale conglomerate, also a large loose piece *A. boydi* and *S. mesastrialis* were seen & *S. dekayi*

240
1471

Mackey
Rocks

Sept. 25¹ - At 1786' ledges of x-bedded ss. up to about 20' thick. At 1830 5' ledge with fossils: - *G. carinatus*, *Actinopteria*, *Pal. emarginata*

Sept 25² - grey cross-bedded, coarse ss. about 10' in ledge. Saw no fossils but must be about same as Mackey rocks.

Sept 25³ - base of Reed Hill -

1349
1145
103

1145 0-1 - 2 1/2' of rather knotty green ss. rest of step covered.

1195 1-12 - covered. Saw a slab loose on road side crowded with *G. erectum*.

1251 12-23 - Heavy bedded rather massive and cross-bedded ss. Saw no fossils.

1251-1282 - covered.

1282-1293 - thin bedded, x-bedded grey ss.

1293-1301 - thin flaky dark shale with interbedded ss.

1301-1307 - grey platy ss.

1307-1308 - arenaceous shale probably pinching out laterally

1308-1336 - thin bedded, blue grey coarse ss. with plant stems.

1336-1418 - covered

1418-1426 - mostly green 241
red weathering ss, with 1 1/2' black
shale at top.

1426-1431 - thin bedded light
greenish grey ss. 1472

1431-1434 - mottled red-green shaly
fine grained thin bedded ss.

1434-1450 - covered

1450-1452 - dark grey flaky sh.

1452-1468 - greenish grey thin
bedded ~~ss.~~ x bedded ss.

1468-1580 - covered.

1580-1610 - thin bedded green grey
ss, x-bedded, with plants

1610-1615 - heavy bedded massive
hard ss.

1615-1619 - platy, moderately
heavy-bedded ss.

1619-1720 - covered.

1720-1737' mostly cross-bedded
ss and shaly ss. Fossils are
abundant at 1724'

S. mesastrialis

S. erectum

Camarotoechia

Sp. mucronatus

T. carinatus

Tentaculites

Pal. emarginata

L. rogersi

Brink of hill just west of house
1785'. Our section runs from road
to house.

Went down hill 1/4 mile N of old
house - 1742-1698 - thin bedded
x-bedded ss. This continues to
brink of hill near 1742.

1698-1675 - same. 1675-1658 - same
at 1660 fossils were found!

Camarotoechia, *A. boydi*

Sphenotus, *Aviculoplecten*, *Bucanop*

big, *Reticularia fimbriata*.

Spirifer mesastrialis was

found by

Dr. D. de Selys

1655-1635 - same
Camarotoechia in the ss.

242

1635-1615 - Brings us to our 1473
of the up-section. This is
It thin, x-bedded ss from top of
hill to 1630.

Section on road resumed.

12-17 - greenish grey heavy
bedded ss. goes up to 19 in
bank.

17-19 + 2 - same. Above this
are 10' + in bank of thin
bedded, x-bedded ss.

Sept. 26 - Section up hill 243
SE of gully

1474

Section begins at 900' -

0-2 - Thin bedded, X-bedded grey sandstone.

2-9 - covered

9-13 - greenish grey, X-bedded ss.

13-21 - same grey, X-bedded ss.

21-28 - covered

At 28 comes 3' X bedded ss, grey with plants.

28-29 - same -

29-40 - covered

40-46 - X-bedded ss with plants

46-54+3 - covered. Hand leveling

~~54+3~~ resumed above 54+3 -

0-1 - X bedded ss with clay-balls at top of this step comes:

Son. lamm.

Gerbratuboid

N. subalata

Mottville sp.

S. mesastialis

S. erectum

Sch. appressus

The rock extends about 2' above the fossils. I think this bed

correlates with the *N. subalata* beds at road W of N. Blenheim and road above Keyser Creek

at ~~935~~^{933'} in this section there is an outcrop of 2' of hard calcareo-arenaceous rock with:

C. flabellus

Mottville sp.

Cyrtina

Schuchertella

Rel. emarginata

S. punctionata

This is same bed as on Grand Gorge road, about 1/2 mile S of N. Blenheim

~~1.11~~

1/2

9/10/11

16

$$\begin{array}{r} 205 \\ \times 5 \\ \hline 1025 \end{array}$$

423

Sept. 26'

244

1475

5 1/2" interval

Section in gully -
Handlevelling begun at 880'

dark sh	3'
Heavy + X bed ss	28'
Dark sh	5'
grey ss	3'
covered	10'
heavy ss	5'
covered	29'
ss	7'
Covered	27'
X bed ss	15'
Position of Plumeal bed	
gr. ss	5 1/4'
Covered	8'
X-bed ss	27'
ss	1'
green sh	10'
Massive ss	6'
covered	2 1/2'
X-bed ss	24'
sh + ss	18 1/2'
dark sh	3 1/2'
Covered	22'
X-bed ss	6'
sh	3 1/2'
ss	1 1/2'
Covered	10'
X-bed ss	32'
Covered	8'

0-1 covered
1-2 - upper 2' in heavy bedded ss.
2-6 - X-bedded, heavy and thin bedded ss.
6-8 - covered
8-9 - at bottom 1/2' hard, massive, light grey, quartzitic ss. Upper part in arenaceous sh thick & lumpy.
9-10 - massive X-bedded ss.
10-11 - Lower 1' in same X-bedded ss. 4' covered.
11-14 - covered
14-15 - upper 3 1/2' in arenaceous shale, dark grey in color. C. covered.
15-16 - same dark sh.
16-19 - " dark smooth shale with thin ss. beds interbedded.
19-20 - lower 2 1/2' in same dark shale. Upper 3' in moderately heavy bedded, irregularly bedded ss.
20-24 - X-bedded greenish-blue grey ss.
24-25 - lower 3' covered, then some 2' green shale followed by 1/2' light grey quartzitic ss.
25-26 - hard irregularly bedded massive ss.
Pos. of Plumeal
26-27 - green smooth shale + thin ss.
27-28 - mostly thin greenish ss capped by 1 + 1 1/2' of pitted green ss. About 6" below the pitted ss we found *Sp. mucronatus*. This bed is

calcareo. arenaceous. This 245 would 1025'.

1476

28-33- X-bedded ss - except for 2' on top which is covered.

33-34 - same but top 3' covered

34-35 - covered

35-36 - 4 1/2' green ss with 1' knotty green ss at top. The ss is not all green. There are thin (2") ~~thin~~ blue grey quartzitic layers.

36-39 - cross-bedded blue-green grey ss with plants.

39-44 - covered
44-45 - hard, heavy-bedded ~~light~~ grey ss with interbedded shaly ss.

45-46 - Lower 2' in same rock Upper - covered.

46-57 - covered

51-52 - heavy-bedded light grey brown speckled ss.

52-54 - covered

54-55 - heavy-bedded light grey ss for 3'. Dark grey shale 2'

55-56 - Lower 3' dark grey shale with plants. Thin follows 2'

coarse grey ss. with clay balls.

56-61 - heavy-bedded + X-bedded ss with clay balls + plant stems.

61-62 - dark greenish grey, flaky smooth sh. Upper 2 1/4' ss.

62-64 - green grey heavy bedded ss with thin bedded sh.

64-67 - at bottom about 5' greenish sandy shale becoming more sandy in top next 5' then turning into dark flaky smooth shales for about 5'.

X bedded ss	11'
platy ss	2'
sh + ss	5'
blue sh	5'
sh to ss	5'
X bed platy ss	25'
ss	7'
covered ss	5'
covered ss	2'
covered ss	12'
light grey sh	30'
covered ss	82'
light grey ss	19'
covered ss	172'
blue sh	4'
covered ss	11'
blue sh	5'
cross bed ss	11'
blue sh	20'
covered ss	11'
Heavy X-bed.	21'
sh + ss	16'
ss	11'
	62'

71
5
355
12
367
880
1247

142

35
1247

Pebble bed
at 1247'

Thin in some
as pebbles bed of
P. 202
see P. 202

67-71- heavy bedded, massive
X-bedded ss.
71-72 At very base of 71' 1247' 77
a pebble zone (about 10' thick)

- abounding in fossils:
- | | |
|-------------------------|-------------------------|
| <i>E. lincklaeni</i> | <i>A. spiniferoides</i> |
| <i>T. exigua</i> | <i>A. decussata</i> |
| <i>R. vanuxemi</i> | <i>T. carinatus</i> |
| <i>P. rana</i> | <i>Pat. ham.</i> |
| <i>Gyt. ham.</i> | <i>M. concentrica</i> |
| <i>Bon. ham.</i> | <i>L. perplana</i> |
| <i>Schiz. appressus</i> | <i>C. coronatus</i> |
| <i>Pal. maxima</i> | <i>P. sectifrons</i> |
| <i>Pal. emarginata</i> | <i>D. dekaeji</i> |
| <i>Par. ham.</i> | |

Rest of step is in dark bluish
grey arenaceous sh. with:

- | | |
|--------------------------|-------------------------|
| <i>C. boothi</i> | <i>C. complanata</i> |
| <i>S. mucronatus</i> | <i>T. carinatus</i> |
| <i>P. al. constricta</i> | <i>Pal. fecunda</i> |
| <i>O. undulata</i> | <i>C. hemistriatus</i> |
| <i>E. lincklaeni</i> | <i>Paralelodon ham.</i> |
| <i>C. coronatus</i> | <i>Mottville sp.</i> |
| <i>Bon. ham.</i> | <i>A. spiniferoides</i> |
| <i>N. triquetra</i> | <i>Pal. maxima</i> |

72-74- same shale

- | | | |
|----------------------|------------------------|------------------------|
| <i>G. arcuata</i> | <i>T. submarginata</i> | <i>N. bellistriata</i> |
| <i>S. mucronatus</i> | | <i>Bucanopsis</i> |
| <i>Mottville sp.</i> | | <i>N. triquetra</i> |

74-75- In intervals 73-75 the
rock becomes sandier and
fossils much fewer

75-77- same kind of bluish
sandy rock the top being (76-77)
heavily cross-bedded.

77-78- cross-bedded ss.

78-79- bluish arenaceous sh.

79-81- covered

81-82- lower 1' covered. Upper 4'
in bluish sandy sh and thin
ss. at top. *Pal. constricta*

The top here
is 1304

172

1304-1476 - covered.

247

Handlevelling resumed at 1476

0-4 - Light grey ss except for the uppermost one foot which is covered. Heavy, irregularly bedded.

1478

4-14 - brings us to the bridge at 1546'

Above bridge 1546 - 1576 covered

1576 - 1606 - heavy-bedded light grey ss.

1606 - 1618 - covered

1618 - 1620 - heavy bedded greenish grey ss.

1620 - 1621 - covered

1621 - 1625 - "

1625 - 1632 1/2 - heavy bedded greenish ss. at the very top of 1616 1/2 we found *S. tullius* a, *S. erectum*1632 1/2 - 1657 1/2 mostly platy X-bedded greenish grey ss. *S.**tullius* was seen at 1642 1/2 and 1657 1/2.

1657 1/2 - 1662 1/2 sandstones change over to bluish arenaceous shales

1662 1/2 - 1667 1/2 - bluish "

with *Pal. constricta*

1667 1/2 - 1672 1/2 - shales alternating with green ss.

1672 1/2 - 1674 - thin bedded platy greenish grey ss.

1674 - 1695 - light greenish grey coarse cross bedded ss

must add 15' to whole section above old rd.

1695
880
815

See p.
251

Covered

25'

X-bed
blue

33'

grey ss

2 1/2'

concret

10'

dark

6'

Covered

72'

X-bed
ss.

21'

sh. green

1 1/2'

ss +
shale

4 1/2'

ss

25'

X-bed

4 1/2'

sh. ss

11'

Covered

50'

ss

1 1/2'

arenaceous
sh

35'

ss

5'

sh 7

9'

sh 4 ss

3'

shaly ss

4'

ss

3'

shaly bed

7 1/2'

ss

2'

ss

1'

ss

14'

ss

8'

ss

16'

ss

10'

750'

Sept. 27 - Cliff between
Breakabeen (2 miles S) and N. Blenheim.
Road along cliff at 750'. Along
edge below road are 2-40' of

X-bedded ss. and sandy shale. The
exposure is highest at the north end.
In the sandstones we saw
B. erectum, C. flabellus, C. coronatus.

At the North end of the section
are 10' of dark blue grey shales
beneath a pebble bed which can
be used as a datum plane for
part of the section at least.

In this 10' we saw: Plant stems,
Camarotoechia,

150 paces south of N end of cliff
pebble bed disappears. The bed
is 4-6" thick and is made of
small 1/4-1/2" pebbles. Vein quartz
common. In another 140 paces

the 6' concretinony bed is beneath
the road. In another 122 paces
comes end of cliff and this makes
416 paces for whole exposure

and end of Southern end of exposure
is at bend in road & river. Above
the blue grey shales with concretions
are 18' of antinaceous blue grey sh.

with Mottville sp., O. parvula,
Camarotoechia. This blue grey
shale passes into shaly ss. with
C. boothi, N. subulata,

A. boydi, Leiopteria, &
P. constriata, C. flabellus,
Bonham, B. carinata,
Favosites, Mottville sp.

Leuconostella, L. circularis.
This is succeeded by a 2' ledge
of very hard resistant ss with
large sp. granulosa, and C. flabellus.
This ledge makes a ridge in the

Fossils seen base of bottom of cliff

I. submarginata

C. flabellus

Pal. emarginata

Gon. ham.

Mottville sp.

A. boyde

cliff. It is brownish grey. 249.
I believe this hard ledge is
the bottom of the ss. forming
the falls of Keyser Kill. 1480

Following the ledge are 7 1/2'
hard shaly ss with *C. flabellus*
P. rana, *C. coronatus*, *Sp. mucronatus*,
Schuchertella. With the hard
ss are thin beds of soft sh. cl. or
1' of shale at top of this 7 1/2' interval
were seen *Mottville* sp., *C. coronatus*,
C. congregata, *Sp. mucronatus*. Just
below this sh were 2' hard calcareous
ss. with *Schuchertella*, *Sp. mucronatus*.

Next come 3' hard irregularly bedded
calcareous ss. with 4" shale at base.
The upper layer of this 3' of ss has
quartz & clay pebbles.

Next 4' dark grey shaly ss.
" 3' hard calcareous ss.
with *Gon. ham.* & *Camartoechia*
in a thin shale layer.

Above the ss cl. & concretions
layer at the very top of this 3' of
ss had *N. arguta*, *R. vanuxemi*,
C. congregata, *Sp. granulosis*?

Above the 3' ss comes 9 feet
of dark grey crumbly arenaceous
shale. In this ~~top~~ occur
A. spiriferoides, *A. fasciculatus*,
C. flabellus, *Pal. constriata*,
Sp. mucronatus, *Mottville* sp.,
M. triquetra, *Camartoechia* a.
S. granulosis, *M. concentrica*,
L. macrodonatus, *A. boydi*, *Ret. ham.*
This 9' of is just crowded with
good fossils. This shale
looks like that on the road
into the Keyser Kill from the
south.

The fossiliferous sh. is followed

100
13/1
1084
175
894

and is probably the
same as Sept. 14' at 790'

by 5' of sandy sh & ss. with 250
storm-roller structure. The
storm rollers are small and lie
above a $1\frac{1}{2}$ ' bed of hard ss
which is about 10' above
fossils 1481

Above the storm-roller zone are
35' of dark greenaceous shales or
shaly ss. breaking like shales
and these we found *N. arguta*
(small) or *N. recta*, *Leiopteria*,
Aspidiferoides. If the exposure
had been favorable for collecting
we certainly would have
gotten more fossils.

On top of this 35' of sh is
a hard layer $1\frac{1}{2}$ ' thick
crowded with *S. granulosa* &
other large *Spinifers*. This is the
same layer as occurred at 1084
on the Kaysen Kill road.

Above the *S. granulosa* it is
covered for 50'

Follows 11' dark shaly ss. with
storm-rollers.

$4\frac{1}{2}$ ' X-bedded platy ss.; 1' covered
16' above the covered interval
we saw *Schuchertella*, *Mottville*
sp., *P. constricta*. The section
above the 1' covered interval is
25' of shaly ss and interbedded
rather heavy-bedded ss.

Above the 25' interval are
~~green sandy stone~~
~~passing to~~ for about 4'
followed by $1\frac{1}{2}$ ' dark platy sh
21' X-bedded greenish grey
ss with plants.

This brings me to 975.

975-1047 - covered

1047-1055 - thin grey
heavy-bedded ss. 25)
1055-11060 - dark arenaceous shale
abounding in *C. coronatus* at
the base. 1482

shr. 5'
X-bed ss 11'
Blue 3'
X-bed ss 2'
gr. sh + ss 7 1/2'
green ss + sh 4 1/4'
covered 1 1/4'
Knotty ss 3'
covered 70'
grey X-bed ss 33'
covered 11'
green ss 7'
covered 48'
thin ss 8'
covered 5'
ss 20'
Blue grey sh F 29'
covered 50'
cross-bed ss 10'
covered 16'
platy ss 13'
Sh with ss lenses 20'
greenish thin bed 16'

1060-1066 - greenish sandy shales
1066-1077 - covered.
1077-1079 1/2 - hard massive light
greenish grey ss.
1079 1/2 - 1112 1/2 thin bedded X-bed.
ss.
1112 1/2 - 1137 1/2 - covered.
1137 1/2 - 1153 1/2 - Thin bedded greenish
ss.
1153 1/2 - 1173 1/2 - Thin, flaky sandy
shale with scattered ss. lenses.
Saw no fossils.
1173 1/2 - 1186 1/2 - thin bedded rather
platy ss.
1186 1/2 - 1202 - covered
1202 - 1212 thin-bedded, X-bedded ss.
grey.
1212 - 1262 - covered
1262 - 1291 - At base come blue
grey arenaceous shales abounding
in fossils:
S. muronatus
C. undulata C
S. alveata
G. constripta
C. coronatus
C. congregata
D. alveata
G. erectum
S. solenoides
S. truncatus
Mottville Sp.
S. granulatus?
P. lanceolata
1291-1311 - moderately heavy
bedded ss.
1311-1316 - covered
1316-1324 - very thin bedded
platy ss.
1324-1372 - covered



1372-1379- Hard green sandstone breaking into 252 irregular lumps.

1379-1390- covered

1390-1391- green crumbly shales. 1483

1391-1394- Grey heavy-bedded pitted ss.

1394-1405- Green shaly ss. + ss

1405-1438- grey cross-bedded ss.

1438-1508- covered

1508-1511- Knotty green ss.

1511-1512 $\frac{1}{4}$ - massive hard green grey ss.

1512 $\frac{1}{4}$ -1514 $\frac{3}{4}$ covered

1523 $\frac{1}{2}$ -1527 $\frac{1}{4}$ - green smooth sh + green ss.

1527 $\frac{1}{4}$ -1528 $\frac{1}{2}$ - grey, heavy bedded speckled ss.

1528 $\frac{1}{2}$ -1536 $\frac{1}{2}$ - green sh + ss. This is 7' of green ss + sh.

1535 $\frac{1}{2}$ -1556 $\frac{1}{2}$ - green grey x-bedded ss + sh. At top of interval (1556 $\frac{1}{2}$) was seen *Mottville* sp.

1556 $\frac{1}{2}$ -1559 $\frac{1}{2}$ - blue grey sandy sh. or argillaceous ss. crumbly like sh. with *O. undulata*, *Sp. mestrupis*-like brachs., *Par. hainulfrige*, *Son. ham.*, *Pal. constricta*,

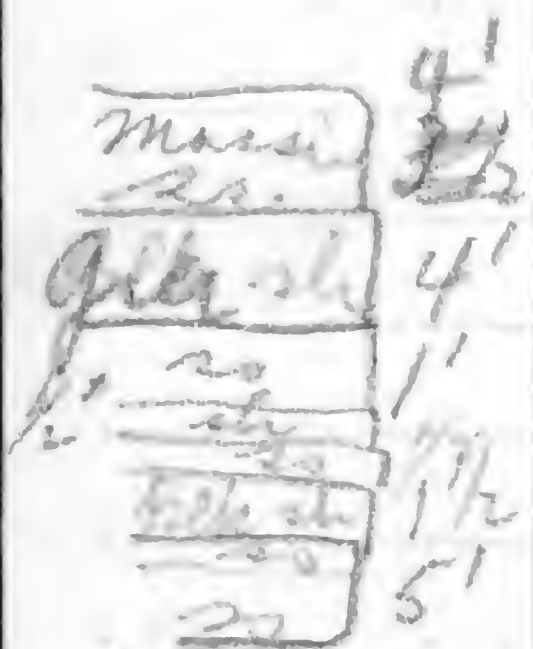
1559 $\frac{1}{2}$ -1572 $\frac{1}{2}$ - X-bedded ss

1572 $\frac{1}{2}$ -1577 $\frac{1}{2}$ - greenish arenaceous sh.

1577 $\frac{1}{2}$ -1582 $\frac{1}{2}$ - greenish, thin-bedded, irregularly bedded ss. and thin beds of shale with the peculiar little Verbratuloid

Sept. 27' — Outcrop on state
road in N. Blenheim - base 253
at 800'.

1484



The quartzite
rock in the
3' green sh.
has
C. coronatus
sp. numerous
large sp.
structure

Lowest 3' greenish grey ss
culminating in 1 1/2' hard, quartzitic
ss. This is followed by 1 1/2' black
shale. Then 1/2' massive green grey
ss, followed by 6" shale. Then
follows 1' green grey ss. Then
come 4' ~~black sh.~~ dark greenish
grey sh. The top layer is 4 1/2'
massive heavy bedded ss like
the quartzite layer 3' above base
The lowest rock slakes into
green irregular lumps when
weathered

Sept. 27² below Sept 27' along
river base at 791'. Lowest
rock is about 1 1/2' greenish grey
hard brittle shale. This is followed
by a ledge of greenish grey, brown
weathering massive ss, which
peters out southward in river bed
followed by 2' of the same rock
The surface of this rock is
undulatory and much marked
These massive ss are succeeded
by 1' smooth greenish grey sh.
The ss below these shales varies
greatly in thickness in short
distances producing domes &
basins
Above the 1' shale are 3 1/2'
grey X-bedded, moderately
heavy-bedded ss. The outcrop
farthest downstream is
about 1/4 mile S of Sept 27'
and at about 788' at



exposes the lowest 5' of
Sept 27', the green ss 257
and the calcareo-quartzitic 1485
rock (1 1/2') above it. In the
quartzitic layer occurs
S. mucronatus & *C. coronatus*
(This is ~~small~~ large in proportion)
The green rock under the
fossiliferous bed is real bright
green.

Sept. 29 - about 100' vertical 255
of heavy-bedded grey ss. Base at
about 765'.

1486

Sept 29 - Hand-leveling begun at
780' in stream and then up
side of hill:-

0-1 - $3\frac{1}{2}'$ of hard, calcareo-arenaceous
rock. The upper foot of this
bed abounds in large
S. granulosa and in G. exigua
The upper 2' are in dark, flaky
arenaceous shales.

1-2 - same dark shales with
thin ss. In the upper foot were
seen small Hyalaea (veta?)

2-4 - same.

4-5 - Lower 3' in alternating
sh + ss, the former predominating.
Upper 2' in heavy bedded ss.
5-6 - rather hard, heavy bedded
ss.

6-7 - irregularly bedded shaly
ss.

7-8 - irregularly bedded shaly
ss for about $2\frac{1}{2}'$. Upper 3' /
covered.

8-12 - alternating sh + ss., shale
predominating.

12-14 - Lower 5-6' in hard
grey ss. with clay-balls
and what appear to be
M. subolata although the
impressions may be clay-
balls. The upper 5' are in
x-bedded grey ss.

14-18 - covered - ~~low~~

18-24 - thin bedded, x-bedded
ss. This ss. forms quite a
ledge on the low hill just
S of the gully.

Atty

thin bed x-bed ss	32'
Covered	21'
ss	11'
alt. sh & thin layers of ss	21'
covered	3'
irreg. bedded ss	8'
ss	7'
sh & thin ss.	22'
ss	$3\frac{1}{2}'$
S. granulosa c.	

This section runs up the hill beside the gully, but 256 rock is exposed in the gully also, probably to above 900' certainly to 880'.

1487

The *Spirifer* bed at 780' is a ledge the one in the cliff at Sept 27 where it is at 854'.

Sept. 29² - Section beginning at 795'.

Sept 29²

First 2' of ~~rock~~ are dark sandy ~~shales~~ shales containing abundance of *Ostracods*. Following this are alternating sh + ss, the former predominating. ~~for~~ A thin (2") layer of ss. separates the *Ostracod* shales from the upper beds.

Following are 12' hard grey speckled ss.

This is followed by about 6" of transitional rock and then by 4 feet of dark grey arenaceous shale. In the 6" were seen:

G. flabellus, *C. coronatus*, *G. mesastriolip* type, *S. granulosus*, *S. mucronatus*, *Crinoid* stems.

In the shales above, which are exposed for about 8' *C. coronatus* is abundant all thru. *C. complanata*, *G. boydi*, small *Camerozoechia*, *P. fragilis*, *Pal. constata*.

These shales pass upward into greenish grey, thin-bedded, rippled ss with plants and *Camerozoechia*. There are about 3' of these ss. exposed ~~at~~ at the top of 16' above the heavy ss. Above the *Camerozoechia* ss are at least 4' of olive green shales.

ss	3'
covered	5' 1/2
Dark sh	8'
Mosses	12'
alt. dark green grey & grey sh	14'
Dark sh with Ostr.	2'

164 pieces 32"

320

492

36 4348

118

64
268
208

with Ostracods.

257

1488

Camp
Harts
Rest

Sept. 2nd - Cliff along Schoham
river just South of east of the
"Dugway" section of Prosser;
At the base are 9' of dark arenaceous
crumbly shales with flat
elliptical, iron rusting concretions
Fossils are:

Camerothechia a, *Pal. constricta*.
D. dekeyi, *N. triquetra*, *Mottville* sp.,

At 9' up comes a decided
change in the fauna and the
shales are a little more
arenaceous. This extends for
about 1'

C. coronatus a *I. submarginata*
Leiopteria *P. rana*
O. undulata *A. boydi*

Then follows 1' hard calcareous
arenaceous rock with *C. flabellus*
Large *Spinifers*. (*S. granulatus* +
mesastrialis types.)

852
3'
15'
11'
17'
6'
20'
17'
11'
9'
River at
752'

Following the calcareo-arenaceous
bed are 17 feet of ss. irregularly
bedded and with a little shale
interbedded. In the lowest one
foot we saw:

B. erectum *M. concentrica*
Gom. hom. *C. flabellus*.
C. corrugata *S. mucronatus*
C. congregata *E. lincklaeri*
S. andacrus (or *mesastrialis*)
Mottville sp. *N. arguta*

By following the cliff from its
north end it proved to be
150 yards in length in this
distance the calcareo-arenaceous
edge drops a little more
than one foot; this flattening
of the dip may account for

the *Spinifer* bed being at 258
such a low elevation at
Sept. 29!

1489

Above the calcareo-arenaceous bed
are 17' ss and then a
covered interval of 20'. On this
are 6' of thin bedded platy ss.
Above this 6' are 17' of covered
There follows 16' of grey shaly ss
abounding in fossils in first 6'.

N. angulata. *S. appressus*
C. flabellus. *Conobrimus* like sp.?
A. spiriferoides *Cytonella nitella*
Pet. Ham.

At 6' above base of this layer the
fossils were most abundant
particularly *N. angulata* and *C.*
flabellus. This ledge is on the
east side of the road just
where it turns a slight bend
and descends the hill. The
road here is at 834', not 800'
as mapped.

The next 15' are in mostly arenaceous
sh + thin bedded ss. Then follow
about 3' moderately heavy bedded
grey ss.

P. rugulata, *I. carinatus* (small)
Cambratocchia

These beds are exposed along the
road as far as the first house
on the left

The calcareo-arenaceous bed
and the ss above with *S. erectum* et al
are same as bed 30' above road at
Dugway.

852
25
827

Sept. 29th - Hand levelling from 259
780 - by map (= ~~827~~!) The house
827 by barometer = 827 by barometer
0-3 covered + 3' covered = 1490

~~cut~~ from road to first outcrop in
a small gully - hand levelling
from covered interval -

0-2 - dark grey shaly ss. or
sandy shales breaking in
fragments:

H. corbuliformis, *C. flabellus*,
H. sandalli, *Goniatites*,
P. patulus, *Productella*

2-6 - covered, except upper 2' which
are in flaggy ss.

Above this are 13' covered

Then comes 9' X-bedded grey ss.

Covered 22'

X-bed
ss

16' Then 16' X-bedded ss with plants
grey, coarse

Covered 22'

ss

9'

covered 13'

flags

2'

covered 19'

sandy
sh

11'

A little N of the house is
a roadcut showing nearly
10'. Here a 2' bed of storm
rollers is exposed. These
were about 6' below the top of
the section at 8.293.

878
199

Sept. 29⁵ -

760

1 1/4 miles SW of Buakabeen

1491

Section in road

760-	X-bed
15'	ss.
10'	covered
7'	sh
2'	ss
5'	sh + ss
24'	covered
18'	Dark sh
15'	covered
890'	

1. crumbly arenaceous sh. with *A. boydi*, Mottville Sp.
2. Hard ss.
3. Mostly hard limy ss., a little black shaly ss. *C. flabellus* seen loose.
- 4 - 18' dark arenaceous sh, sandy at bottom. We saw *Camahotoechia*.

Sept 29⁶ - in gully below 1st house on road at 900' bend. Section starts at 870' -

- 0-1 - Dark arenaceous shales.
1-2 - " " "

becoming ~~very~~ irregularly bedded sh. The latter abounds in fossils!

- | | |
|---------------------------|----------------------------|
| <i>N. arguta</i> a. | <i>E. consobrinus</i> like |
| <i>Camahotoechia</i> | <i>Pal. emarginata</i> |
| <i>A. fasciculatus</i> c. | <i>C. flabellus</i> |
| <i>Leiopteria</i> | <i>A. spiniferoides</i> c. |

M. concentrica
G. truncatus
N. recta
The fossil begins in the first
of the second step and
the one two feet above the
first step the same
comes in the 3' of the 2nd also
M. concentrica
2-3 - same

2-3 - is in irregularly bedded ss. same as upper 2' of (1-2). This rock carries the same fossils. Above this step are 3' in the same rock.

Above the 10' ss are thin-bedded shaly ss with thin layers of ss. (6") near the middle. This shaly ss looks to the bottom of the 18' of dark ss in S. 295.

This Nyassa bed seems to be the same one as exposed at the Hart's Rest Camp.

Thin bedded
shaly

4 thin 33

Caravan

ing
beds
10'

7000

sh

Sept 30 -

262

Handlevelling begun at 1128 -

1493

~~at~~ First rock seen is 8' of hard grey rather massive ls. After 12' covered comes 2' grey calcareous ss. meeting to a brown powder. Then comes 16' heavy-bedded ss and 4' covered. Then 2' green rotten ss with plants and S. granulosa. There follows 7' light grey heavy bedded ss with Mottville sp. S. erectum, Myasoa-like alga, S. alveata. All in thin shaly bands. Follows 20' shaly, thin bedded ss with water bedded heavy ss beds. Concretions are abundant in the upper 1' the rock is sandy and has small pebbles. Here were found:

A. decussata	P. maxima
E. lincklaeni	P. rama
T. caringensis	Rhipidomella
C. bellistriata	S. rhynchonatus
S. appressus	A. spiniferoides
P. lanceolata	L. perplana
S. l. l. l.	Centronella impressa

This is the same bed as the pebble bed of Prosser at Mill Creek and our pebble bed at Sept. 26'. ~~There~~ This bed is at 1190'.

Above this fossil zone are 65' feet of dark blue grey arenaceous shale. 22' above the pebble zone S. cuneata is abundant. This is the same

1328
10' 10' 16' 37' 65' 20' 7' 2' 4' 11' 12' 6 1/2'
ss
Blue sh
covered
F
ss
Blue
arenaceous
sh.
Pebble bed
shaly
ss.
ss
Covered
Heavy
35'
covered
ss

This pebble bed
is the Portland
point

zone we saw in the ²⁶³ road and gully at ¹⁴⁹⁴ Sept. 1494
Between 40 and 45' above the pebble
bed *P. radiata* was found.

There are 65' of these dark bluish
shales above 45' they become
rather smooth and with
some thin ss. we saw no
fossils above 45'.

Above the blue shales are
37' of ss. The lower 10' of this
ss are platy and at the top
was seen *S. tullius*. Above
the ss are irregularly bedded
for 15'. They come 10' platy
and X-bedded ss. At the top
are 2' hard calcareous ss with
S. tullius.

Covered 16'

Then follow 10' feet of
blue grey arenaceous shales
with *O. undulata*, *Mottville* sp.,
S. globosa, *Son. lrum*, *S. approx*,
L. rogersi. About 1' below the
top of this shale we found the
small *Leiorhynchus* or *Leiorhynchus*.

Above this shale are 10' of
very hard irregularly fracturing
blue clay ss. with vertical tubercles.
This is the ss. that forms the
brink of the Mine Kill falls.

Sept 30' — Section of cliff ²⁶⁴
 on Schoharie opposite ¹⁴⁹⁵
 at bend.

Lowest 5' in speckled light grey ss. ~~and~~ which dips rapidly into the river.

Next are 6' of dark grey, flaky shales with thin layers of hard ss about 3" thick.

Then 22' blue green x-bedded ss with some massive layers. Then comes 1' of smooth black flaky shales.

Here follows about 68' of heavy-bedded greenish grey ss. with scattered beds of thinner bedded ss. The only fossils seen were plants. This layer is probably the lower plant horizon.

On a line of large blocks about 1/8 mile upstream from the east end of this section *Amnigenia* were found. They apparently come out of the blue green, x-bedded ss layers of ss just above the black shale. I believe the blocks yielding the specimens to be in place.

Same heavy ss as below 15'
 Heavy bedded massive ss. 68'
 Thin x bedded blue green ss. 22'
 Black sh. ss 6'
 ss 5'
 River

October 1.

1496

265

Rain in the morning.

In the afternoon went to Mill Creek to collect from the Portland Point (Sept. 15th).

- | | | |
|-------------------------|---|---------------------------|
| <i>E. impressa</i> | | <i>E. erectum</i> |
| <i>A. decussata</i> | | <i>M. concentrica</i> |
| <i>Pal. maxima</i> | | <i>M. subulata</i> |
| <i>S. mucronatus</i> | | <i>Gon. ham.</i> |
| <i>T. carinatus</i> | a | <i>P. patulus</i> |
| <i>G. spiciferoides</i> | c | <i>P. rana</i> |
| <i>E. chondatus</i> | r | <i>C. boothi</i> |
| <i>E. lincklaeni</i> | a | <i>R. vanuxemi</i> |
| <i>Pal. emarginata</i> | | <i>Schuchertella</i> |
| <i>N. bellistriata</i> | | <i>R. cycloz</i> |
| <i>S. appressus</i> | | <i>C. bellistriata</i> |
| <i>S. capillaria</i> | | <i>Conularia undulata</i> |
| <i>Pholidostrophia</i> | | <i>Platyceras</i> sp. |

The P. P. consists of about 18" of rather hard, light-blue, calcareous sandstone weathering greenish grey. At the base are about 2" of quartz pebbles heavily crossed together. The upper 16" has less pebbles but larger ones, up to 2 and 3" in one direction. Under the P. P. was a fissile grey shale breaking into thin flakes. Above are blue grey shales abounding in *Ampelata*, *C. tenuistriatus*, *Gon. ham.*, *T. carinatus*, and other fossils.

The fauna listed above is essentially the same as that found in the upper bed of the Portland Point at Cooperstown. The lower beds with *Vitulina* have apparently disappeared.

L. periplana
Platyceras
A. princeps
Corygonocolum
Cephalopod

shaly, and nodular



October 2

266

Bully of Tobias Wayman 1497

5' 2"

Handlevelling begun at 1695

0-1- Long 12' in floggy greenish sandstones. Rest covered

1-2- Lower 2' covered rest in dark shaly ss. becoming heavier ss at the top.

2-4- dark sandy crumbly shale abounding in *C. scyphalis*, *B. mucronatus*.

4-5- These shales become thin floggy ss. and shaly irregularly bedded ss. forming the first low falls. In the floggy sands

and shaly ss were seen:

C. flabellus c

Bon. ham.

C. coronatus a

Mottville sp.

Sp. mucronatus

5-6- Dark arenaceous shale which contains 1' above base of step:

Artypa - a.

Schuchertella

Sp. mucronatus c

C. flabellus

C. congregata

Cyt. ham.

Bon. rugosa

Leiopteria

S. andaculus

6-7- dark blue-grey shales - about 2 1/2' up in the step fossils abound wide *Sp. mucronatus* a, *C. congregata* a.

7-8- same but becoming firmer & sandier forming a 5' falls, the top of which is at top of 7-8.

8-9 covered

9-10- Lower 3' in hard shaly ss. forming a falls. At top of falls were seen:

S. granulatus

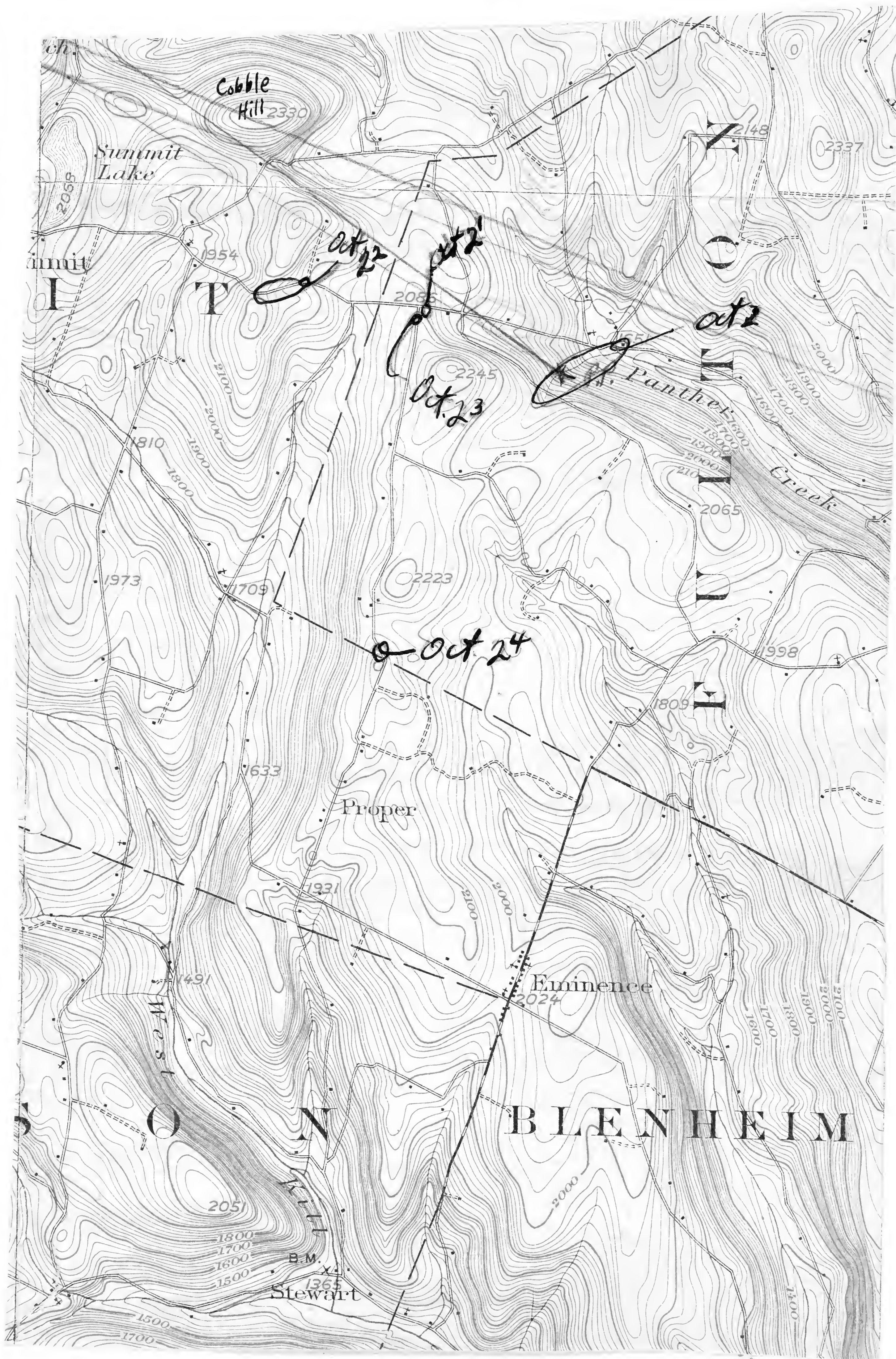
Mottville sp.

S. erectum

S. alveata

S. andaculus

S. mucronatus



The upper 2' are in ~~the~~ 1498
dark sandy shale with
Mottville Sp., Nyassa-like clam.
10-11 - shale becomes thin

bedded ss. with:
Mottville Sp., Grammysia,
Nyassa-like clam.

11-12 - Dark blue argillaceous
shales with:

O. undulata,
these last for 2 1/2' and then pass
pass into heavy-bedded ss
for 2 1/2'. At the top were seen
Comanotocchia

12-13 - 2 1/2' fine flaky blue grey
shales passing into irregularly
bedded calcareous ss. In the 3' of
ss. were: *G. erectum*, large sp.,

C. congregata, the latter practi-
ally makes up the upper layer.

13-14 - very sandy irregularly bedded
blue grey shales with large

C. congregata, fine ribbed wide
sp. *micronotus*, *G. erectum*.

14-15 - mostly thin bedded platy
ss forming a fall.

15-16 - 1' same as preceding
rest covered

16-17 - upper 3' in. platy, coarse
rippled ss.

17-22 - covered

22-24 - rather platy, coarse ^{grey} ss

24-25 - lower 2' in heavy
bedded, light grey coarse ss.
~~rest~~ rest covered

25-26 - covered

26-30 - X-bedded grey sandstone
in upper 5' *Stellaria* is very
abundant.

30-31 - Dark blue grey argillaceous
shale with *O. undulata*

62

31.
5
155
5
164
5
169
5
1859

*Barometer makes
Vitulina at 1855'.*

268
1499

31-32 — $1\frac{1}{2}'$ from top of this
step *Vitulina* occurs. This
would put the *Vitulina* and
the base of the Portland Point
at 1859'. The lower 4' of this
step are in the same dark
shales as 30-31.

Portland Point — These strata are
 $18''$ of shaly, nodular or lenticular
coarse ss. with fine conglomerate
small quartz pebbles and large
clay balls occurs. In the lower
part of this layer were seen
V. pustulosa, *G. erectum*, *T. carinatus*,
Pal. emarginata, *Soncham*, *S. mucronatus*,
Sp. granuloseus. Above this $18''$ bed
is a $2\frac{1}{2}'$ layer of coarse, heavy
blue grey, calcareous ss. that
weathers mostly brown. In this
were seen *Pal. maxima*. It is
evident that our *Vitulina* bed
disappears before reaching the
Scholarie Valley.

31-32 cont'd — P.P. upper beds $2\frac{1}{2}'$.
Then $1\frac{1}{2}'$ blue grey shale.

32-45 + $\frac{1}{4}'$ — Blue grey shales
with small lamellibranchs
C. bellistriata — *M. mytiloides*
O. undulata — *Sp. mucronatus*
etc.

Oct. 2nd - about 4' of 267
 X-bedded blue grey ss.
 with *N. cuneatus*, *N. trigonatus* 1500
Carinatus and plants.

Oct. 2nd -

Section begins at 2140 -
 0-1 - Thin bedded grey ss. abounding
 in clay balls. The ss contain *S.*
tullius. At the very top are 2"
 of coarse brown ss. with black
 clay pebbles & *C. carinatus* &
S. macronatus.
 1-4 - covered
 4-5 - coarse ss. with clay balls
 for 3'. Upper 2' covered
 5-6 - Lower 2' covered. Upper
 3' in thin bedded, platy blue grey
 ss.
 6-7 - At bottom of step is about
 1 foot irregularly bedded,
 ss having a blocky fracture
 here occur -
S. tullius *S. gregarius* c
C. complanatus *T. caliginatus* (large)
S. macronatus *Sphen. tuncatus*
T. parvulus
 Covered 4', upper 1' in upper 2' sh
 7-8 - Upper 3' in grey arenaceous
 shales and this is top of hill
 as sight is 2' of top of hill.
 Very top of divide is at 2180'

Grey sh	5'
covered	1'
fine ss	1'
Platy ss	3'
covered	4'
coarse ss	3'
covered	15'
ss	5'

Oct 2³ - coarse grey ss
with plants, 10 or 12'

270
1501

Oct 2⁴ - base at 2170 - 15' of
ss and thin greenish grey shales
with *P. liata*, *S. microfakes*,
Leiopteria, *D. caninata*.

Went thru Eminence for outcrops -
found none. Went to Eminence
via N. Blenheim. N. Blenheim, Eminence,
Proper + Summit.

STATES

g spurs separated by ravines. The spurs are truncated at their lower ends by a sea cliff. The hill at the left terminates abruptly at the valley in a steep scarp, from which it slopes gradually away and forms an inclined table-land, that is traversed by a few shallow gullies. On the map each of these features is represented, directly beneath its position in the sketch, by contour lines.

The contour interval, or the vertical distance in feet between one contour and the next, is stated at the bottom of each map. This interval differs according to the topography of the area mapped: in a flat country it may be as small as 1 foot; in a mountainous region it may be as great as 250 feet. Certain contour lines, every fourth or fifth one, are made heavier than the others and are accompanied by figures showing altitude. The heights of many points—such as road corners, summits, surfaces of lakes, and bench marks—are also given on the map in figures, which show altitudes to the nearest foot only. More exact altitudes—those of bench marks—as well as the geodetic coordinates of triangulation stations, are published in bulletins issued by the Geological Survey.

Lettering and the works of man are shown in black. Boundaries, such as those of a State, county, city, land grant, township, or reservation, are shown by continuous or broken lines of different kinds and weights. Good motor or public roads are shown by fine double lines, poor motor or private roads by shaded double lines, trails by dashed single lines.

Each quadrangle is designated by the name of a city, town,

Red beds between Gobsburg &
Preston Hollow on W side road

1502

Oct. 3 - Section of Potter Hollow
near bridge -

Basal beds in stream bottom
are coarse ~~conglomerate~~ sandstone
for about 1'. This is succeeded
by 18" of conglomerate, mostly of
upin quartz. This contains Mottville
Sp., Centronella, S. erectum.

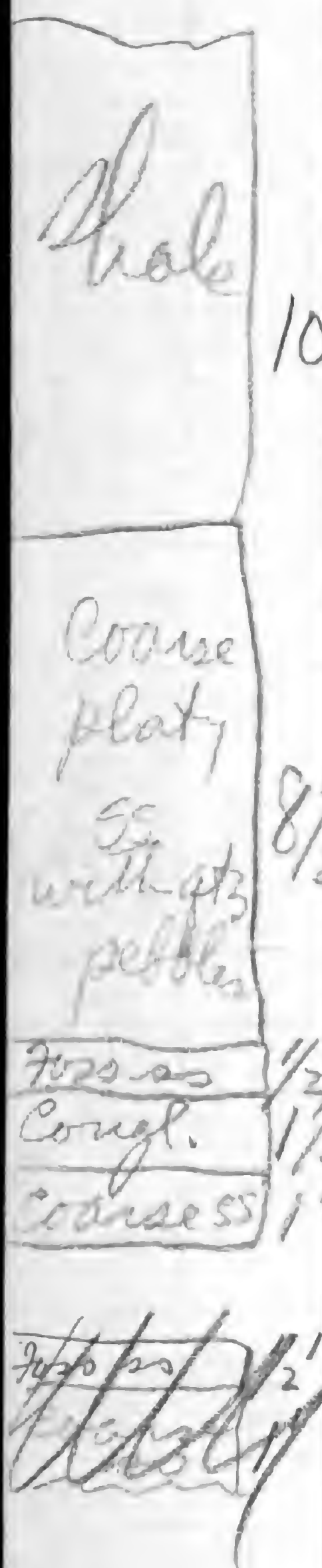
Above this come 8 1/2 feet of platy
sandstones. In the basal 6" of
this ss are scattered pebbles and
fossils: O. undulata, Centronella, S.
carinatus, S. erectum, Schuchertella,
D. deKayi. In the 18" conglomerate
also occur abundant + large
limonitic concretions.

Above the 6" fossil bed are 8 1/2'
of coarse platy ss. with scattered
pebbles. On the upper surface
there are abundant pebbles,
some large, up to 1 1/2" across.

Above the ss are 10' of
dark blue gray flaky shale

with:
Hyalites aclus
M. pygmaea
O. parvula
C. scitulus
Mottville Sp.
C. bellistriata
E. carinata?
Leiopteria
T. carinatus
P. constriata
S. appressus
Tentaculites
P. parallela

It is believed that this conglomerate
with *Centronella* represents the
easternmost extension of the
Portland Ford. On the road to
Conesville + Gilboa were red and
green shales shown in position
above + below the upper Portland Ford



Oct 3' - Platy greenish, X-bedded
ss. 10-15' exposed!

1503

J. carinatus *G. erectum*
Mottville *Schuchertella*

Rensselaer
Falls

In this ss was seen some
conglomerate and one thick piece
not in place suggested that
of Oct. 3. The ss in the field
at about 1200' is about on the
strike of Oct. 3 and correlation
is suggestive. in road at
1280 are blue platy ss. with
plants, seen all about 30' are
exposed.

Red & green ss
& shales above

Oct. 3² - Felters Sh. - *Estheria* bed
at 1210'. This *Estheria* bed is in
black shale interbedded in
green & red shales & ss, mostly
shales.

Coarse
ss

12'

Oct 3³ Rensselaerville Falls.

Red
sandy
sh.

12'

Hard, crumbly shaly ss to 1415'
elevation. Fossiliferous

Green
sh

10'

Next 3' some harder shaly ss.
" come 40' grey, green sandy
shales and thin ss. the former
predominating.

Mottled
ss. & red

11'

Mottled green & red 11'

Grey
15'

6" *Estheria*

Green sandy sh. 10'

Green
15'

Red

Red 12'

Wh. a little
ss

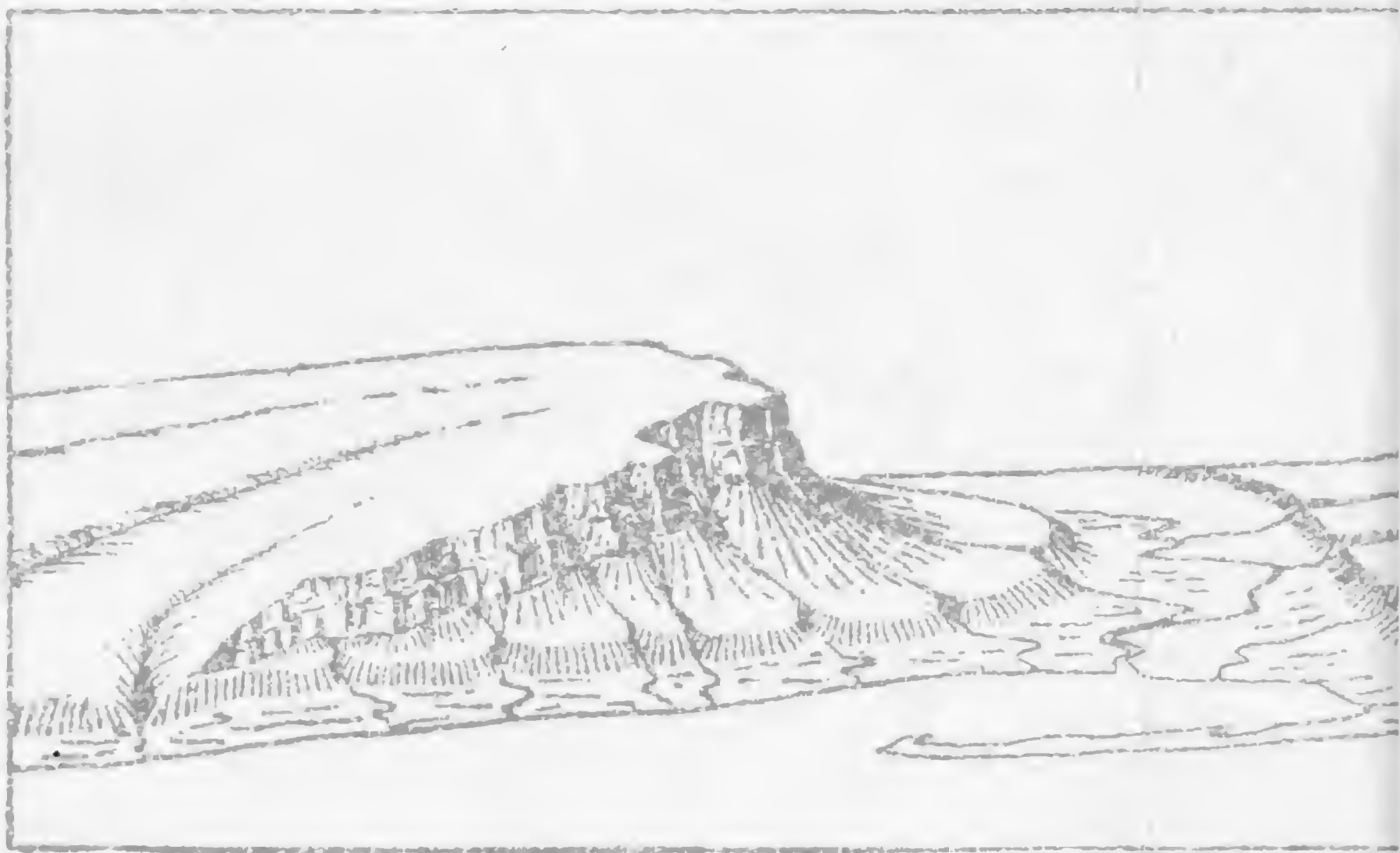
40'

Coarse grey, massive, bedded ss.
12'

Foss
crumbly
shaly
ss

1415'

22'



The sketch represents a river valley hills. In the foreground is the sea, which is inclosed by a hooked sand bar. On each side of the river is a terrace into which small streams have cut. The hill on the right has a rounded summit and is covered with grass. The hill on the left has a series of spurs separated by ravines. The

suffi

scale

1, 5

2

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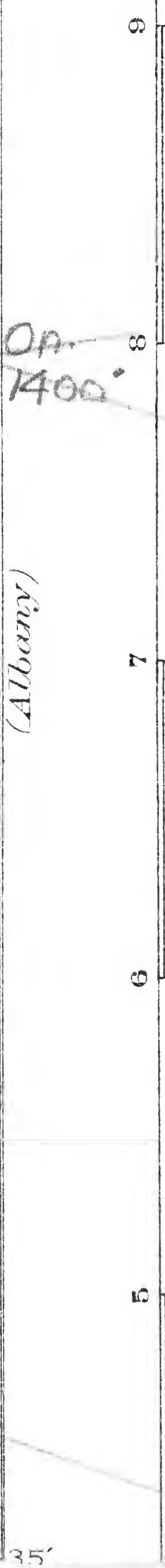
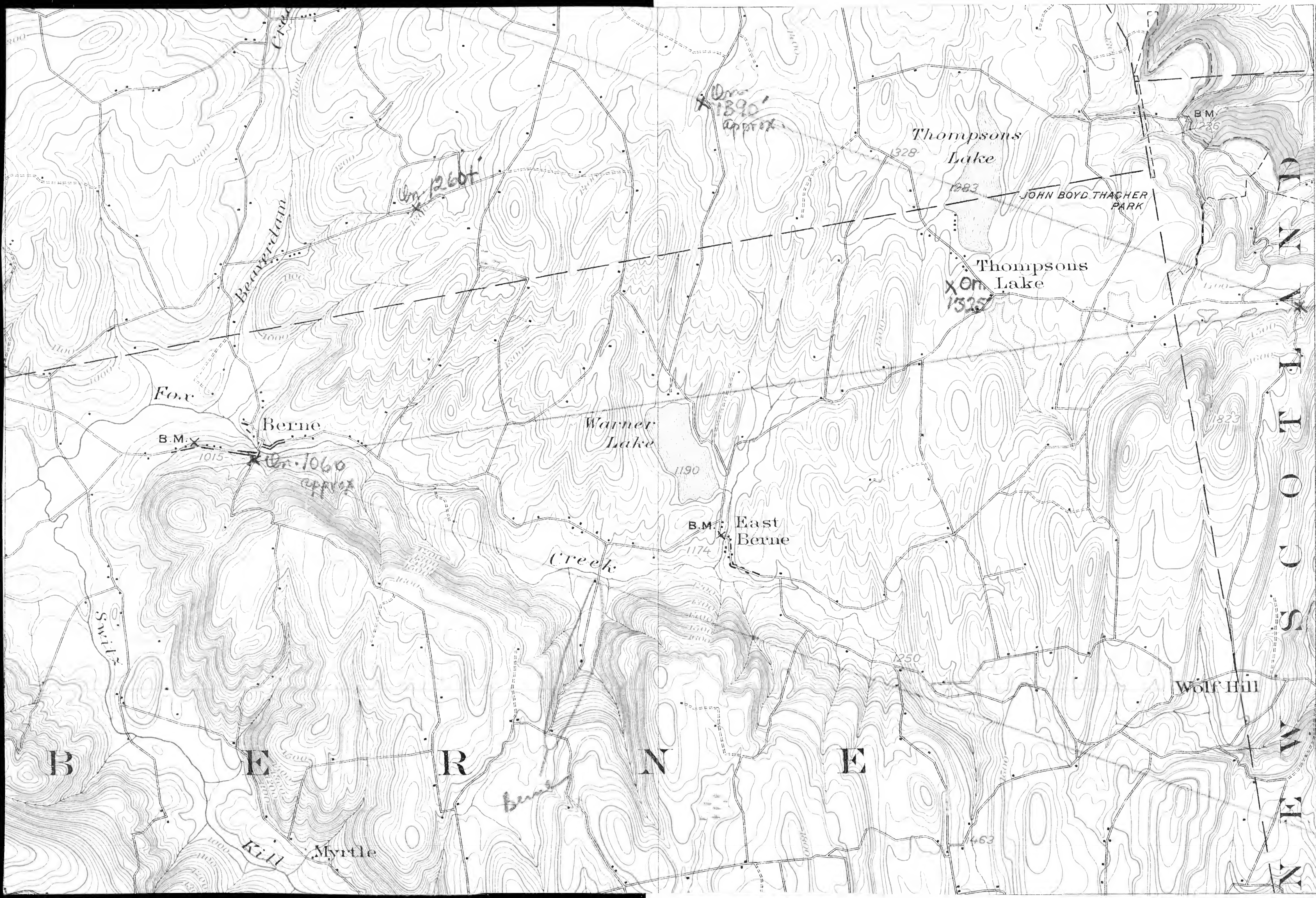
hills

(wor



The sketch represents a river valley that lies between two hills. In the foreground is the sea, with a bay that is partly inclosed by a hooked sand bar. On each side of the valley is a terrace into which small streams have cut narrow gullies. The hill on the right has a rounded summit and gently sloping spurs separated by ravines. The spurs are truncated &

1503a



1060

Oct. 34 - Dark arenaceous crumbly shales about 10' high in quarry. Fossils abundant. This is same as Oct. 21st of 1931 trip. 1504

October 35 - Coarse ~~arenaceous~~ shaly ss for 1' capped by 8"-1' of calcareous arenaceous Gicki:
P. flabellum ~ *C. gregarius*
P. maxima ~ *U. sectum*
C. coronatus a *Sp. sp.*
C. conjugata a *Bon. lum.*
A. cora a Large *Cypicardella*?

Section up hill
SW. of East Beane

October 4.

Handborelling begun at +180' - 1204'.
 0 - 13 Soft dark gray, white streaking arenaceous shales with a concretionary or shell-like fracture and breaking into irregular lumps. Some thin and scattered sandstone beds. When weathered the rock is colored rusty red. Some pieces have a shiny silvery purple color due probably to Mn.

Fossils are rare: *Protolopidodendron*, fragmentary straight-shelled cephalopods.
 13-14 - Lower 4' in firm shaly ss.

Then comes 2-3' having corals and abundant ~~other fossils~~. The lower 2' of the coral bed is hard & calcareous. Above the corals are crumbly & powdery shales with fossils. Fossils are:

S. andaculus a.
Sculptilis like brach.
C. vicinus ?
Atropa
Sp. divaricatus
Toxonema
A. cora

Cystiphyllum
Zaphrentis
Favosites (branching)
Cladopora
T. gibbosa
Meristella
R. fimbriata

This bed is the same as at Beane. Will above the "Chittanooga" on Scholastic Street.

340

8

140

1120

276
245
721

1475
271
1204

1540
1475
75

271
1215
1486

1570
1555
15

3

Leiorhynchus
L. trilobis
Leiorhynchus
Leptostrophia

274
Coelospira?
A. boydi
Pal. Secunda
Rhipidodonta
 1505

slabby ss 2 1/2'
 6"
 blocky dark grey sh 19'
 155'
 x-bed ss 10' 35'
 flaggy ss 1620
 shaly irreg bed ss with interbed flags 65'
 1555
 shaly irreg bedded ss 50'
 1505
 partially covered flaggy ss 30'
 1475
 covered 10'
 heavy dark grey shaly ss 155'
 dark grey aren. sh 1'
 dark sandy crumbly sh 30'
 coarse F 10'
 dark sandy crumbly sh 65'

After this 10' fossil bed the rock is the crumbly dark arenaceous shale breaking into small fragments that below this continues for 30'. Saw straight cephalopods here.
 Then comes 1' finer shaly sandstone abounding in fossils: *S. andaculus*, straight ceph., *Isomurus*, *Wenuloceras*, *N. arguta*, *Hyolithes*, *Comularia*, *A. cora*, *C. tenuicinctus*, *B. sulc-marginata*.
 After this one foot fossil bed the dark grey crumbly shales continue being interbedded with hard ss. beds. At about 100' above the 1' fossil bed the rock becomes hard massive arenaceous sandstone rock with fossils. There were seen: *S. multicostatus*, *Atrypa*, *C. coronatus*, *S. acuminatus*, *S. andaculus*.
 There are 10' covered from top of intersection to top of exposures on hill.
 From intersection to first 30' along road to the east the rock is flaggy ss with few fossils. The rock is exposed in the ditch and is partially covered. With the flaggy beds are irregularly bedded shaly ss. These ss may represent the lower hard beds of our *Athyris* zone. The upper 10' of these hard ss beds have a blocky fracture and seem somewhat

04.1
04.2 4 flaps
04.3 - study
04.4

78
1122
1000

15
12
10-11

calcareous *Leptæria* is abundant at the top.

Then follow 50' of shaly ¹⁵⁰⁶ irregularly bedded ss or arenaceous shales with few fossils, in the lower 35' but abounding in fossils in the upper 15'. The fauna is: *C. cf. coronatus* (like that of *Athyris* zone), *J. carinatus*, *C. flabellus*, *B. circularis*, *O. undulata*, *P. lirata*, *Camarotoechia*, *P. vanuxemi*, *Boz. hem.*, *L. aspidium*, *P. constricta*, *P. maxima*, large sp. (2 sp.), *S. andaculus*. This fossil zone is just at first bend east of intersection.

The road was followed S from the bend for ~~the~~ 0.3 miles to the next bend of the road at 1570'. At about 1580' flags were seen but soon the shaly ss. reappear and continue to the bend.

Hand levelling from head at 1570' - 0 - 10 - shaly ss, irregularly bedded predominant with a little flaggy ss. and limonitic concretions.

C. coronatus.

B. erectum.

Tronurus

Nephriticeras

S. mucronatus

P. lirata

This runs to about 1620' a little above the house on the west side of the road.

Then follows flaggy blue gray ss containing a great abundance of *S. mucronatus* in the lower 10 or 15'. This ss is about 35' thick and extends to 1645'. The uppermost part of the ss had plants. The upper 10' is x-bedded.

At 1645' comes a road into a small quarry and we have 10' from this road to quarry partially covered. On floor of quarry are hard ss

The 10' between 1645' & 1655' is merely covered.

contains - *N. arguta*, *C. gregarius*, 276
C. coronatus, *S. mucronatus*, *I. cainatus*

1507

There follows this as 19 feet
of soft arenaceous dark grey shale
and small grey with:

C. congregata a *C. scitulus*
C. coronatus *S. appressus*
S. mucronatus

P. lirata
C. flabellus

This shale crumbles in irregular
lumps just like the typical Cardiff
and the rock at the base of this
section. I believe the rock of the
gr. floor + below to be the
Oriskany zone and the rocks of the
the base of the *Leiorhynchus* beds
going over to a Hamilton facies.

I think the beds at 1273' in
Manorskill are same as
Terebratula bed along Grand
Gorge road at 1310' about 1 1/2 miles
NW of Gilboa

Oct. 5 - 277
 Revisited Manorhill 1/2 day.
 Bed carrying *S. mesasthialis*
 is at about 1115' and thus 1508
 clearly below the *S. fullins* zone.
 The *S. fullins* zone may come
 at the top of the last falls at
 the Manorhill. The X-bedded ss
 of the uppermost falls contains
 considerable green & red shale.
 Also westward along the cliff
 are beds of red and green
 which equal these sandstones.

Sept. 204 - revisited - blue green
 beds at 1305' below the beds of
 the top of the hill was found
 the small *Lebratuloid* which
 occurs on the Manorhill at the
 top of the middle falls. By
 projected dip this seems just
 above the last falls at Manorhill.

Hy 30
 2 mi. NW
 of Gilboa
 Oct. 5 - 1280-1285' - X-bedded &
 hard, coarse, blue-green gray
 ss. with *S. mesasthialis* P.,
Centronella, *Sp. sp.*, *Chonetes*,
Palaconotus.

1685
1440
245

Oct 6 - Rains

Oct 7 - Handlevelling begun at 1509²⁷⁸ -

0-3 covered

3-8 - thin bedded, x-bedded blue grey ss.

8-9 - same

9-10 - lower 3' in ss

10-13 - covered

13-14 - lower 2' covered, upper 3' in blue grey ss.

14-16 - same

16-18 - covered

18-20 - hard greenish grey ss

20-21 - covered

21-24 - green grey, x-bedded ss, upper 10' very hard irregularly bedded + massive

24-25 - green sandy + smooth shales in lower part clays + small plicate, tabulate.

25-26 - green shales pass into mottled green + red sh with 2' mottled green ss at top.

26-27 - green smooth sh.

27-28 - Lower 1' green shale upper 4' red shale + banded red ss at top.

28-32 - practically all covered but small patches of green sandy shale show up rather

32-33 - At base 3' of green grey sandstone.

1630 came a 5' ledge in field at 1655' coarse ss with

S. mesastriatus

1675-1685 about 10' sandstone abounding *S. mesastriatus*, *P. emarginata* etc.

1360

1440'

1702
1700
2

1702
1700
2

1702
1700
2

1702
1700
2

the heavy bedded hard ss. ledge just below the 279
foss. green shaley may 1510
be the same hard ledge
as at Oct 5 at 1285 where
there are 4' of this ss.
exposed. Further this ~~is~~
hard ss may = the middle
+ upper plant beds ~~at the~~
~~with the~~ 8. mesostriolis bed
at the Manorhill.

Oct. 7 cont'd - In morning went
down to Manorhill Falls in
order to study old road.
Found it under water. Over-
night the reservoir had become
almost completely full from
the heavy rains. Reptudied
4' of heavy bedded sandstone
at Oct. 5. We found no fossils.
At Shew Hollow we found
a Leiorhynchus zone in the ss
below the red & green shales.
The fossils appeared to be
Hamilton species. We found
among others the *N. curvus*
which we saw elsewhere in
the Moscow east of Summit +
in the Tully-Sherburne on the
Grande Gorge road.

October 8.

480

Handlevelling begun at 1511 720'

0-1 - 4 feet of dark grey
arenaceous sh. with:
Leiorhynchus *Goniophora*
P. livata a *G. parvula*
M. oblongatus *S. mucronatus*
S. costatum
1-19 - heavy bedded & platy ss
interbedded with dark arenaceous
shales. At top were seen
C. congregata and *S. costatum*
19-22 - ss, thin platy.
Found loose *Oronaster*

For a discussion of the relation-
ships of the *Oronaster* & *Paranotia*
see *W. H. R. Pal. N.Y.* 5, pt. II,
Lamellibranchiata pp. 516-518

1512

281

Smith puts Centerfield with
 Skan. Here is another case
 just like Moffville. The left
 of Centerfield puts it with Skan
 the same with the bed. As with
 Moffville in Western N.Y. the
 Centerfield is well marked to
 but in Eastern N.Y. it is
 transitional with lower
 beds. Another argument against
 the old formation names.

1460
1760

200

1688
1440
248

1860
1210
273
250

96

August 27.

1513

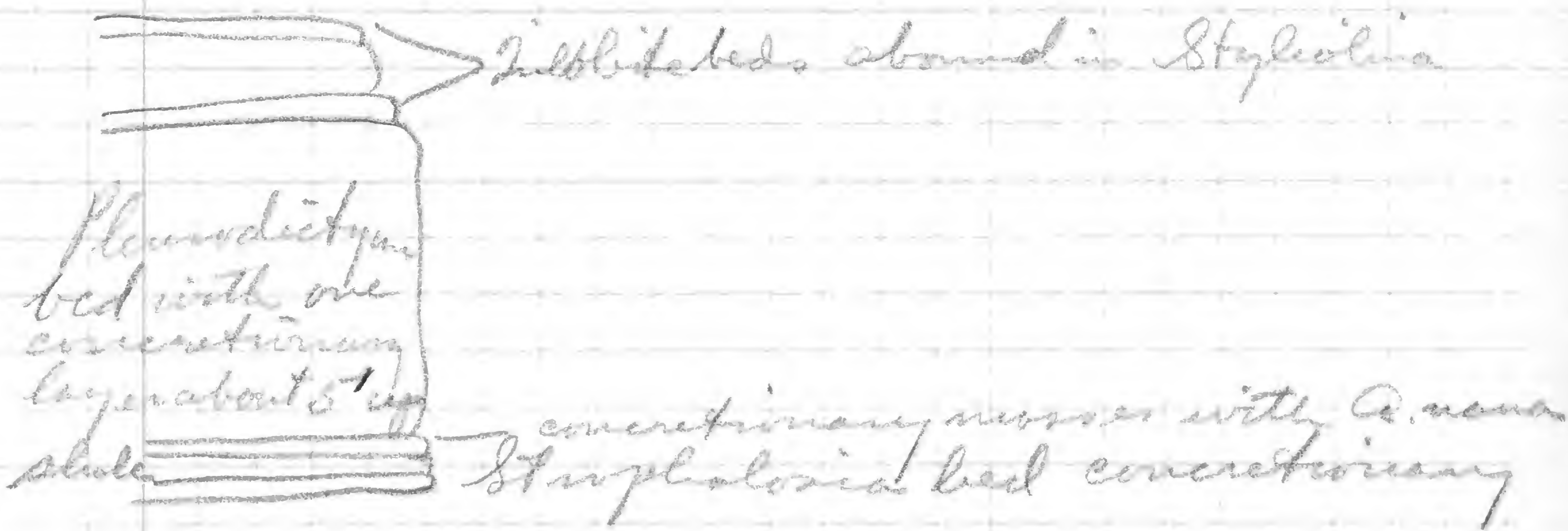
72

Stafford - below dam at Corns Park. Here there are about 4 feet of gray medullar limestone exposed. The beds are separated by layers of black shale. The rock looks like layers of cemented concretions.

Aug 27'

Mudon Creek

Lithology exposed just north of road in several beds of crinoidal ls., then on this is the *Meristoth.* *Dryopora* stream the *Pleurodictya* bed across.



The exposure along the ~~Lytle~~ road E. N. 35 I have listed as Elliott Creek is labelled as Eleven Mile Creek on the highway sign (check) See if there is an Elphick mile creek crossing highway a little east of Alden

Aug 29.
Hills Butch

1514

73

Kooling
Mentith

10'-1'

The coral bed (A) is

Deep
Run

2½-3'

mostly of *Helicophyllum*
Favosites are mostly

Cinivind.
ls

1'

club-shaped, small.
Other genera are rare.

shale

2'
shaly to 2"

Craspedophyllum is

Coral
shale

1'-3'

A common. A.S. W.

shaly to

6-8"

Took *Pleurodictyum* from

shale

3'

shale just under Cinivind
ls. ledge. This was of the
large, coarse-cup type

York

74

1 mile West of York
where north-S road has
deep lead occurs
Munteth at about 840'
Below it are Deep Run
and Dickerson. The
Deep Run is $3\frac{1}{2}$ -4'
thick. The Dickerson
is like that at Hill
Gulch.

